

SACRAMENTO SAN JOAQUIN DELTA PRIMARY ZONE STUDY

Prepared for:

Delta Protection Commission

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PRIMARY ZONE STUDY



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1 INTRODUCTION

Senate Bill X7 1 directs the Delta Protection Commission to prepare and submit to the legislature recommendations regarding the potential expansion of or change to the Primary Zone or the Delta, including recommendations on the status of: Cosumnes/Mokelumne River, Andrus/Brannan Island, Isleton, Rio Vista, Bethel Island, and the San Joaquin/South Delta Study Area. Based on this directive, the Delta Protection Commission has prepared this Primary Zone Study.

Regulatory Background

The Delta received its first official boundary in 1959 with the passage of the Delta Protection Act (Section 12220 of the Water Code). This legislation established the boundaries of the “Legal Delta.” The Delta Protection Act of 1992 (Act) established the Delta Protection Commission, a State entity to plan for and guide the conservation and enhancement of the natural resources of the Delta, while sustaining agriculture and meeting increased recreational demand. The Act defines a Primary Zone, which comprises the principal jurisdiction of the Delta Protection Commission. The Secondary Zone is the area outside the Primary Zone and within the Legal Delta; the Secondary Zone is not within the planning area of the Delta Protection Commission (DPC 2010).

The Act (Public Resources Code Section 29760 et. seq.) requires the Commission to prepare and adopt and thereafter review and maintain a comprehensive long-term Resource Management Plan for land uses within the Primary Zone of the Delta (Resource Management Plan). All local governments, as defined in Public Resources Code Section 29725 with respect to land located within the Primary Zone, shall cause their general plans to be consistent with the Resource Management Plan.

The Primary Zone of the Sacramento-San Joaquin Delta (Delta) includes approximately 500,000 acres of waterways, levees and farmed lands extending over portions of five counties: Solano, Yolo, Sacramento, San Joaquin and Contra Costa. The rich peat soil in the central Delta and the mineral soils in the higher elevations support a strong agricultural economy. The Delta lands currently have access to the 1,000 miles of rivers and sloughs lacing the region. These waterways provide habitat for many aquatic species and the uplands provide year-round and seasonal habitat for amphibians, reptiles, mammals, and birds, including several rare and endangered species. The area is extremely popular for many types of recreation including fishing, boating, hunting, wildlife viewing, water-skiing, swimming, hiking, and biking (DPC 2010).

The goals of the Plan, as set out in the Act, are to "protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment, including but not limited to agriculture, wildlife habitat, and recreational activities; assure orderly, balanced conservation and development of Delta land resources and improve flood protection by structural and nonstructural means to ensure an increased level of public health and safety (DPC 2010)." The Plan also provides guidance to State agencies undertaking activities in the Primary Zone.

On September 28, 2006, Governor Schwarzenegger signed Executive Order S-17-06 to develop a Delta Vision and establish an independent Blue Ribbon Task Force to provide a sustainable management program for the Delta.

The Delta Vision and subsequent Delta Vision Strategic Plan, as part of a sustainable management plan, identified reviewing whether the Primary Zone should be expanded or changed. Six study areas identified for change were: Consumes/Mokelumne River, Andrus/Brannan Island, Isleton, Rio Vista, Bethel Island, and the San Joaquin /South Delta. This was incorporated into SB X7-1, which directed the DPC to conduct a Primary Zone Study and develop recommendations to the legislature. This Primary Zone Study has been prepared to provide the DPC with an analytical frame work to make recommendations to the legislature.



2 DELTA OVERVIEW

Background

The Delta is a unique and valuable resource and an integral part of California's water system. It receives runoff from over 40 percent of the State's land area. The Delta provides habitat for many species of fish, birds, mammals, and plants; supports agricultural and recreational activities; and is the focal point for water distribution throughout the State (DWR April 2007).

Delta Resources and Constraints

Agricultural Resources

Agricultural lands within the Delta are highly productive and well suited for ongoing agricultural operations. Delta counties have recognized the value of the agriculture economy and have clearly delineated Delta lands for long-term agricultural use. Local governments use specific land use tools to protect the agricultural way of life within the Delta. These tools are the inclusion of agricultural elements in their general plans, the adoption of urban limit lines, the establishment of buffers between agriculture and other approved uses, the adoption of Right-to-Farm ordinances, full support of the Williamson Act programs, the control of land subdivision and land use types allowed within agricultural areas, the establishment of minimum agricultural parcel sizes, and the establishment of limits on General Plan land use designation changes (DPC 2010).

Some agricultural lands provide rich seasonal wildlife habitat. Thousands of acres of agricultural lands are flooded after harvest and provide feeding and resting areas for resident and migratory birds and other wildlife. This practice of seasonal flooding helps maximize the wildlife values of agricultural areas and lessen opportunities for agricultural pests (DPC 2010).

Biological Resources

The aquatic habitats historically ranged from fresh to brackish and are home to both resident and migratory fish. The Delta provides substantial habitat for resident and migratory waterfowl and shorebirds.

Recreational Resources

The Delta provides exceptional recreational opportunities including boating, fishing, hunting, hiking, biking, camping, and wildlife viewing. Recreational users originate from both within and outside of the Delta. Many of the visitors value the wide expanses of open land, interlaced waterways, historic towns, and the feeling of a slower pace of life within the Delta (DPC 2010).

Delta Waterways

Delta waterways are the single most important geographical feature of the state's water resources system. Historically, over 40 percent of the state's runoff flowed to the Delta via the Sacramento, San Joaquin, and Mokelumne rivers. Many of the waterways follow natural courses while others have been constructed for specific purposes (DWR 2007).

Soils

For millions of years, river flows and tidal action deposited upstream sediment in the Delta, the low point of the Central Valley. Thick organic soil, commonly referred to as peat, was formed as tules and other plants were covered by this sediment throughout the years. These organic soils, up to 60 feet deep in some areas, were first farmed in the mid-1800s. Some islands are now more than 15 feet below sea level. The subsidence of land is from farming, which exposes the peat to air, causing oxidation which breaks down the peat.

Levees

In 1880, the State Engineer designed a flood control plan for the Sacramento Valley. This plan included a system of levees and bypasses for transporting floodwaters away from protected areas. In 1917 Congress authorized the Sacramento Flood Control Project, which was completed by the U. S. Army Corps of Engineers in 1960. Storage reservoirs and similar protective measures have been provided on the San Joaquin River. These systems – denoted “project levees” to distinguish them from other levees – provide effective flood control for only a small portion of the Delta (DWR 2007).

Most of the Delta lowlands are protected by levees not within the Federal/State Sacramento Flood Control Project system. These are designated as “non-project” levees. Improvement and maintenance of non-project levees is very challenging because of poor foundations and regulations to protect levee wildlife habitat. Local districts are responsible for maintaining these levees and may be reimbursed for a portion of the costs under the Delta Levees Subvention Program established in 1973.



3 STUDY APPROACH

Establishing the Delta Primary Zone Committee

The Delta Protection Commission established a Primary Zone Committee comprised of Commissioners Albright, Cabaldon, Ferguson, Pegos, Piepho, Ruhstaller and Vick. The Committee developed a framework to guide the preparation of the Primary Zone Study, consistent with the mandates of the legislation.

Defining the Study Area Boundaries

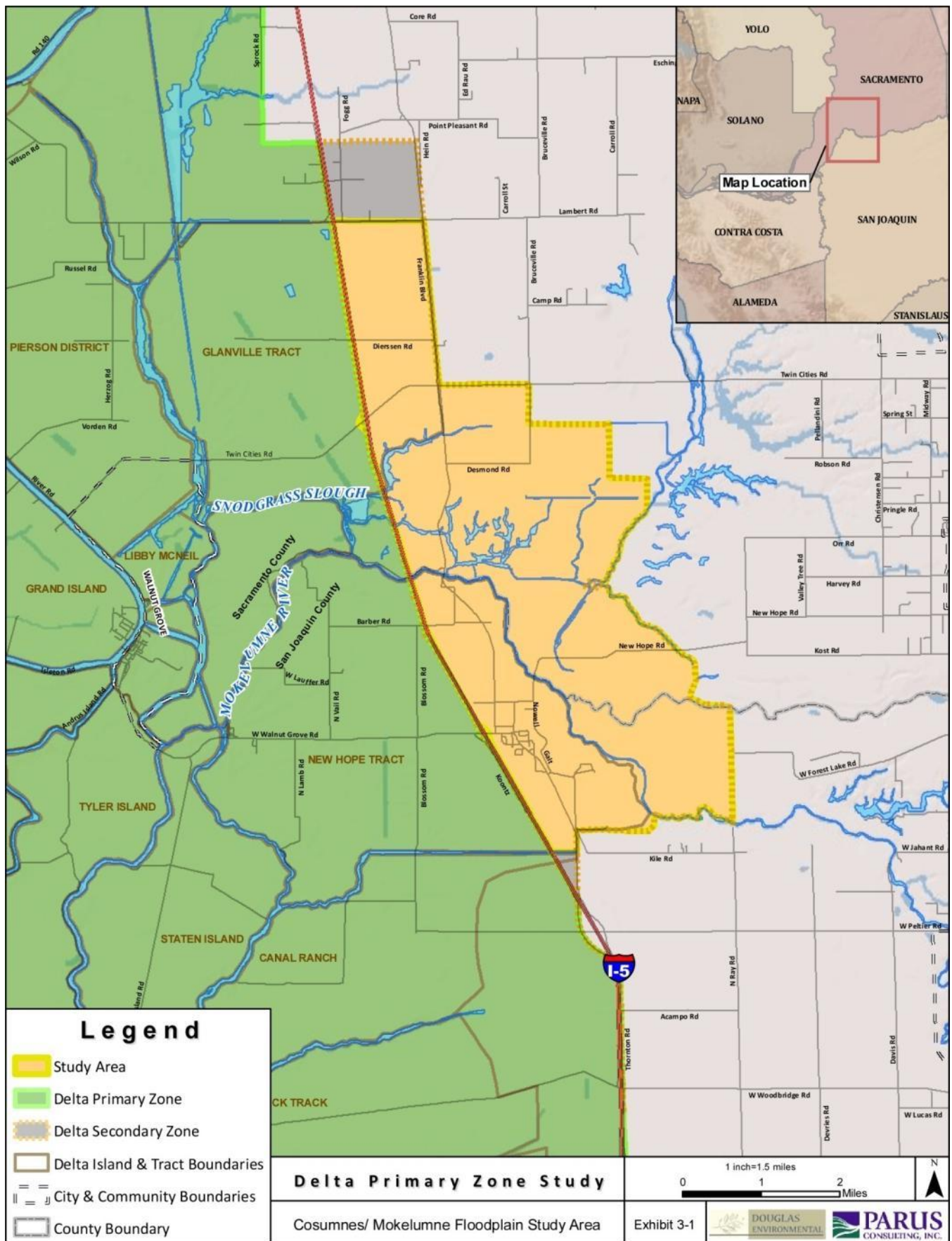
The first task of the Committee was to delineate the study area boundaries. The consultant team researched the legislative intent and the origins of the six identified study areas. The consultant team determined that the Delta Vision document prepared by the Governor's Blue Ribbon Task Force on January 29, 2008 provided a geographic context for the six study areas. Based on geographic descriptions included in the Delta Vision document, the consultant team prepared preliminary study area boundary maps. The consultant team worked with the Primary Zone Study Committee to refine the map boundaries. Based on input provided by the Committee and interested community members, the Committee's understanding of the intent of the Delta Protection Act as it applies to the Primary Zone, and the expertise of the consultant team, the Committee and consultant team developed the boundaries for the study areas. Final maps were prepared by the consultant team and were submitted to and adopted by the Delta Protection Commission. These maps are identified as Exhibits 3-1 through 3-5 below. The boundaries for the Isleton and Andrus/Brannan Island Study Areas are included on a single exhibit.

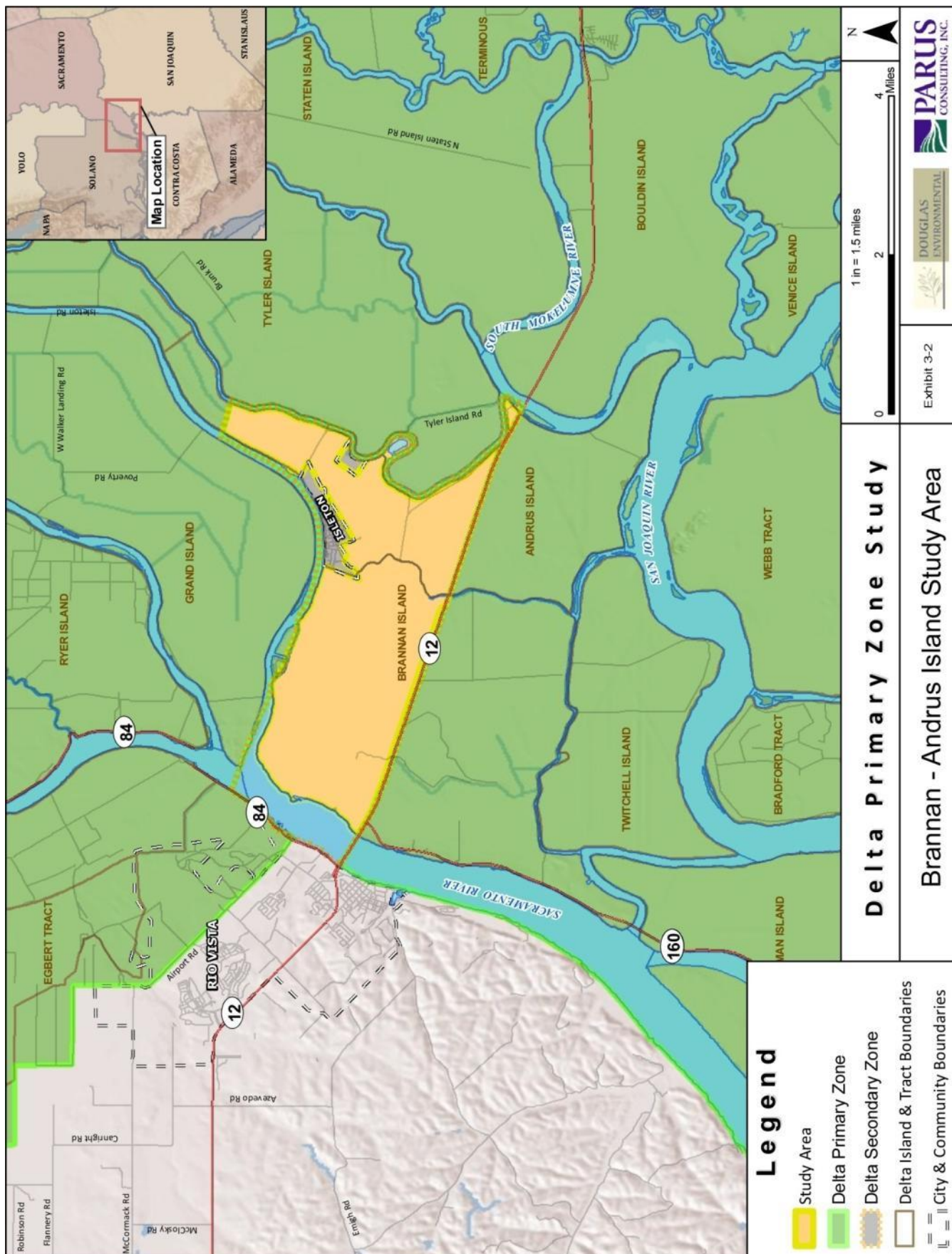
Study Approach

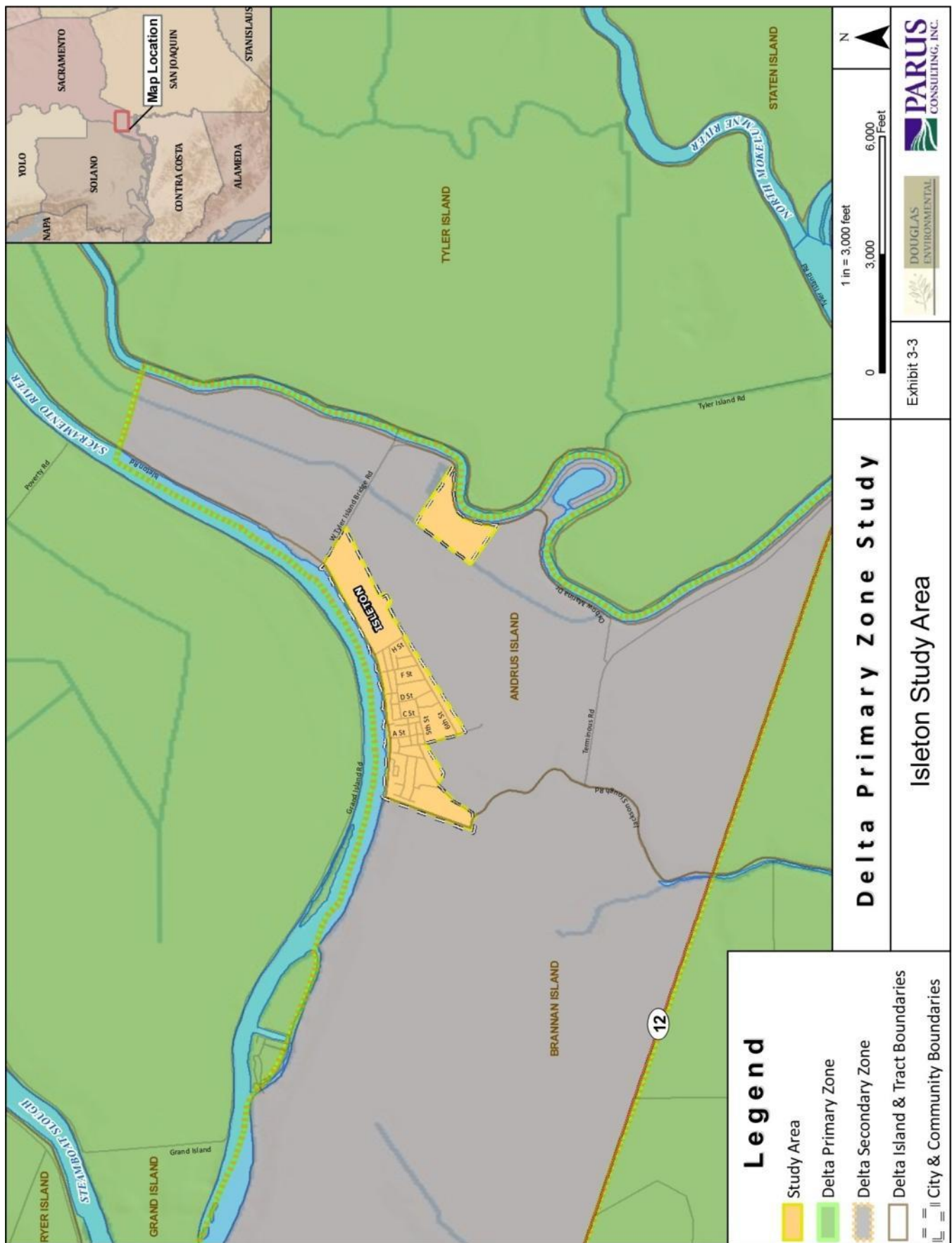
One of the basic objectives of the Delta Protection Act of 1992 is to protect, maintain, enhance and restore the key agricultural, wildlife, and recreational resources of the Delta. This objective provides the basic framework for assessing the resource characteristics, described above, within the legal Delta and their contribution to the Delta's unique character.

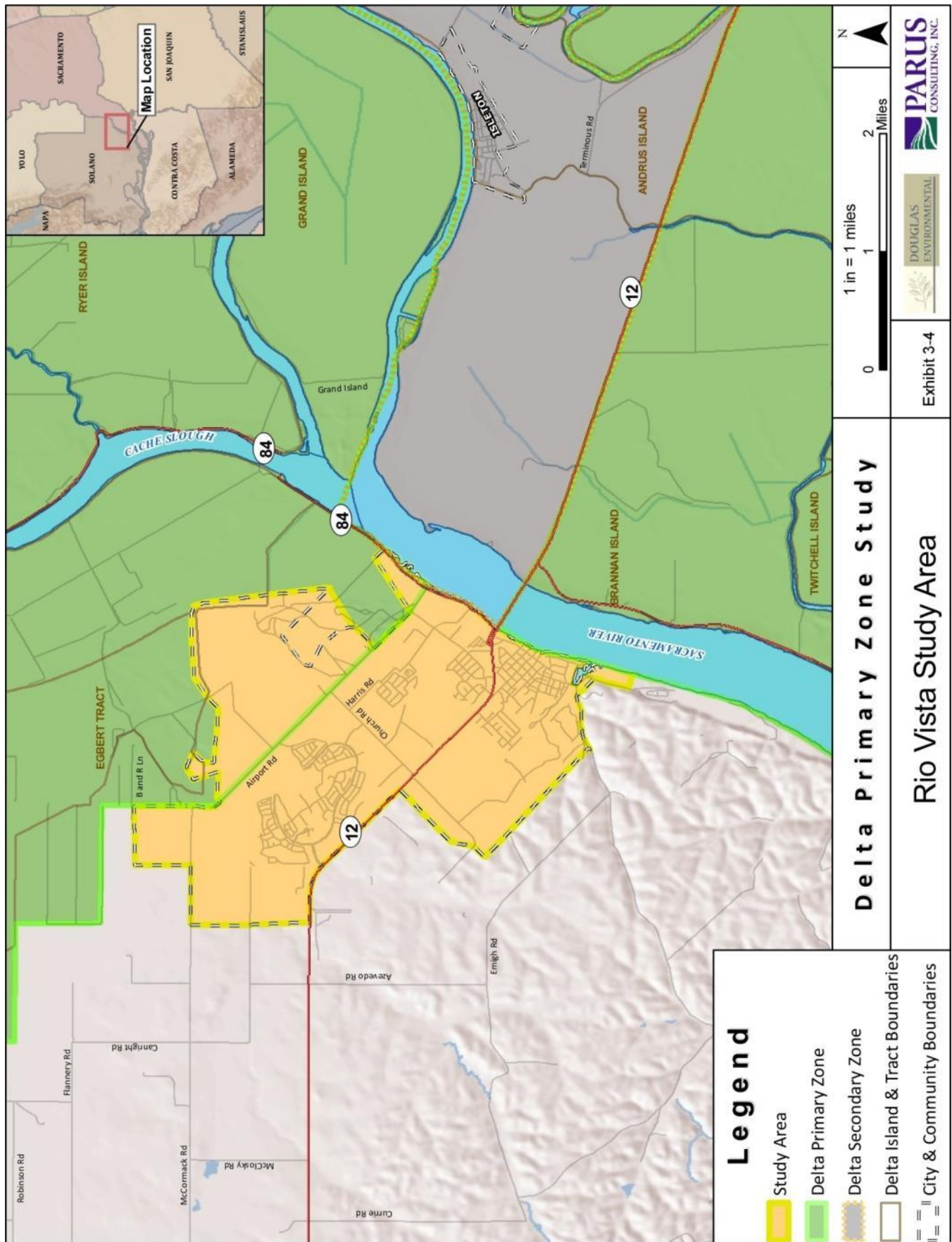
Based on this background, the Primary Zone Committee determined that the key purpose of the Primary Zone Study is to define those areas of the Delta that contain the unique agricultural, recreational, wildlife and cultural resources that are clearly representative of the Delta. Defining these uniquely Delta areas was a driving force in developing the approach to preparing the Primary Zone Study and provided the bases for the recommendations to be submitted to the Legislature regarding the potential expansion of or change to the Primary Zone or the Delta.

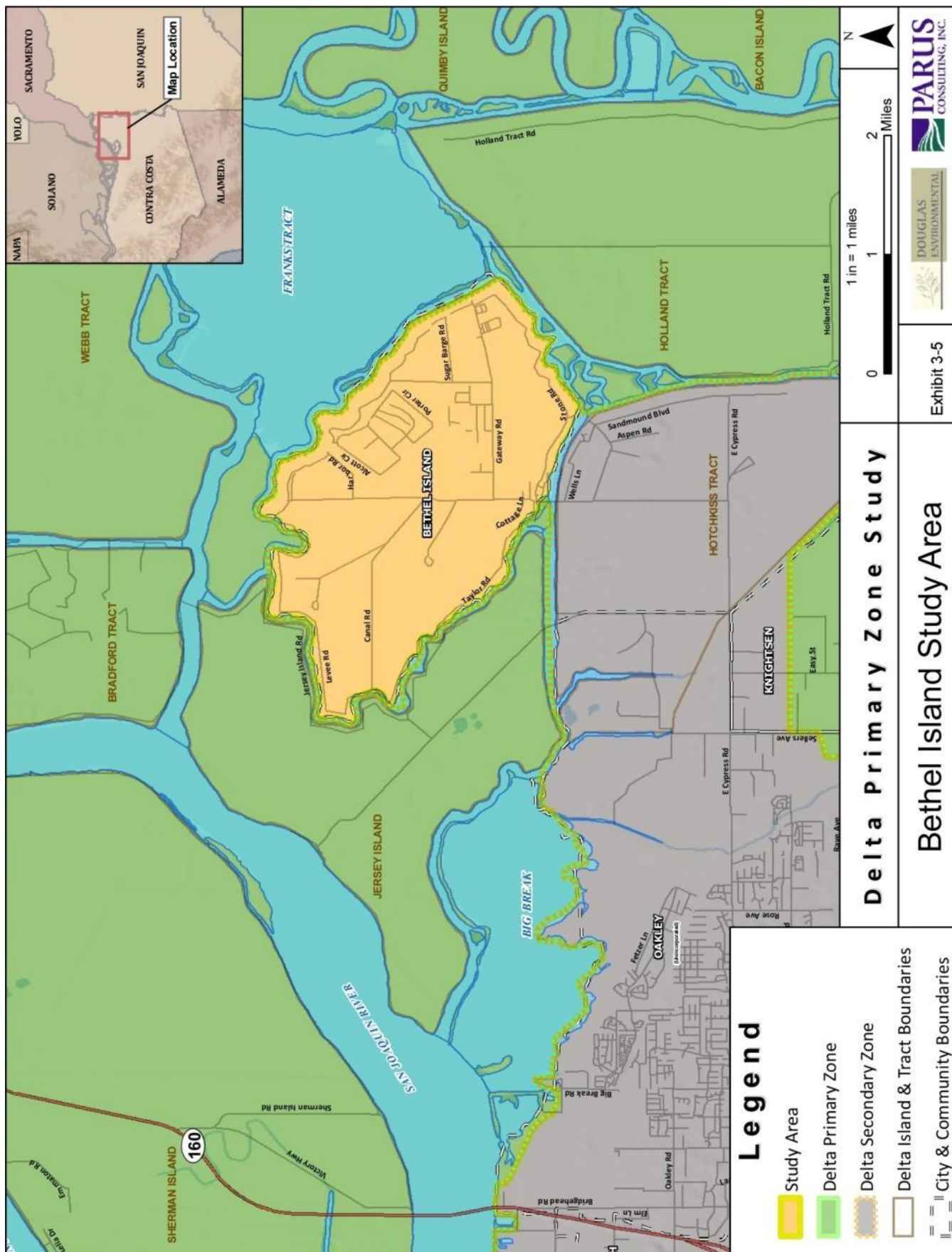
In order to evaluate the six study areas, the consultant team collected available data regarding the unique characteristics and resources within each study area. To be able to present this data in a usable form to the

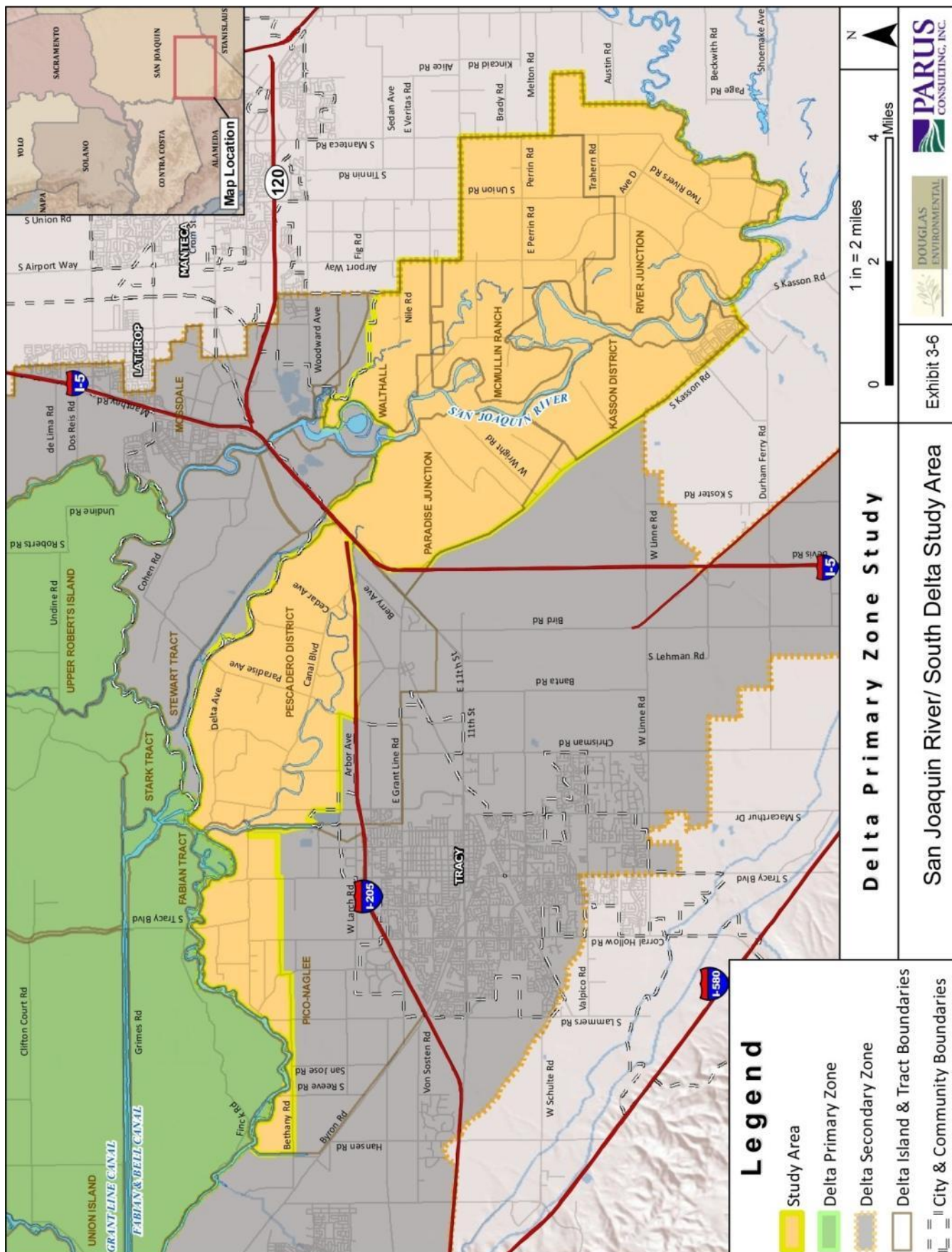












Committee, the consultant team proposed the use of an Analysis Matrix to analytically evaluate data within individual study areas. The Analysis Matrix provides a visual representation of the resource characteristics of each individual study area.

The Committee identified the key evaluation criteria to be used by the consultant team in developing the Analysis Matrix. The consultant team refined these criteria based on their ability to provide useful information and feedback related to potential boundary line adjustments. These evaluation criteria are described in detail in the discussion of the Analysis Matrices below.

The consultant team initially considered ranking the criteria according to a fairly subjective assessment of whether the criteria had a low, medium or high compatibility with the Delta resource protection objectives of preserving and enhancing agriculture, recreation, wildlife, and the Delta as a place. However, based on direction provided by the Committee and input from community members, the consultant team revised the analysis approach in order to incorporate a more objective methodology. For each criterion evaluated, the Analysis Matrix identifies whether the resource criterion is applicable to the study area or not, based on the objective definitions of the criteria.

Once the Analysis Matrices for each study area were completed, the consultant team assessed the results. For each study area, the consultant team determined whether the majority of the resource criteria were supportive of the Delta resource protection objectives of preserving and enhancing agriculture, recreation, wildlife, and the Delta as a place. If the preponderance of the evidence suggested that the individual study areas were supportive of the identified Delta resource protection objectives as defined by the evaluation criteria, a recommendation was developed to include that study area within the Primary Zone. However, if the evidence did not suggest that the individual study areas were supportive of the identified Delta resource protection objectives, a recommendation was developed to keep the study area within the Secondary Zone.

Community Outreach

Community Workshops and Outreach

The Delta Protection Committee made clear during the preparation of the Primary Zone Study that community outreach would be a critical component of the process. Based on their commitment to get input from the people that would be directly affected by any changes in boundaries within the Delta, the Committee held two community workshops to discuss the Primary Zone Study immediately following the hiring of a consultant. These included two community workshops held in Courtland and Isleton on June 22 and 23, 2010, respectively. Interviews were also conducted with local government representatives for each of the five Delta Counties, with community groups and with private individuals within the Primary Zone Study boundaries. In addition, the monthly meetings held by the Committee were open to the public and the minutes from all of these meetings are included on the Delta Protection Commissions website. Input received during the Committee meetings and from the public outreach efforts is being used to refine the study parameters.

Public Concerns

A key issue raised during the initial community workshops was the need to gather additional public input and reach out to communities potentially affected by the Study. Community members raised concerns that due to

the tight timelines for completing the Study, many of the people that could be affected by the Study recommendations would not have an opportunity to participate in the process and would not be made aware of its ramifications.

Community members raised concerns about including areas within the Primary Zone and specifically requested that the following areas be excluded from the Study Areas:

- Stewart Tract
- Oxbow Marina
- Area on Brannan Island in the northeast corner of Highway 12 and the Sacramento River

In addition, local government agencies and interested community members have requested that specific areas currently included in the Primary Zone be considered in the Study for redesignation as Secondary Zone. These areas include the following:

- Unincorporated Towns (Clarksburg, Courtland, Hood, Locke, Walnut Grove and Ryde)
- Snug Harbor
- Agricultural/Industrial Area Near Port of Stockton

In addition, representatives from the City of West Sacramento requested that areas of the City within the Secondary Zone be studied for potential removal from the Secondary Zone designation.

In response to these concerns, the Committee developed a broader public outreach effort in order to ensure all interested parties would have an opportunity to participate in the Study process. This effort is discussed in greater detail below.

Community Meetings

The Committee concluded that the best way to inform residents of the Primary Zone Study would be to send postcard notifications to all of the residents within the Study Areas that were recommended for inclusion in the Primary Zone. These postcards notified individual residents about three community meetings that were to be held to discuss the preliminary study results. These Community Meetings were held on November 3 at the Brentwood Senior Activity Center, November 4 at the Thornton Community Hall, and November 9 at the Rio Vista City Hall. Approximately 20 community members were in attendance at each meeting, as well as representatives from the Delta Protection Commission.

The community members were presented seven maps delineating the overall Delta area and the six study areas. At each meeting, an introduction was provided by Mike Machado, Executive Director of the Delta Protection Commission. The consultant team presented an overview of the study and the proposed recommendations for each area. The consultants then asked participants for their questions and comments. In addition, the participants were offered comment cards and were provided a phone number for follow-up questions and comments.

A number of the community members attended the meeting due to an interest in water diversion projects being proposed by the State and were concerned that the Primary Zone Study was connection with the State's proposed water diversion activities.



4 STUDY AREA CHARACTERISTICS

Study Areas

Six Study Areas were evaluated in this study. These Study Areas include the Cosumnes/Mokelumne River, Andrus/Brannan Island, Isleton, Rio Vista, Bethel Island, and the San Joaquin/South Delta Study Area. The resource characteristics of these Study Areas are summarized below and are depicted in greater detail in the attached exhibits.

Cosumnes/Mokelumne River

Overview

The Cosumnes/Mokelumne River Study Area is located on the east side of Interstate 5 at the confluence of the Cosumnes and Mokelumne Rivers approximately four miles east of Walnut Grove. This approximately 12,000-acre area extends from the southern border of New Hope Tract to the northern border of Glanville Tract and extends to the eastern boundary of the Legal Delta. The area comprises the town of Thornton to the south, the Cosumnes River Preserve in its center, and Lambert Road to the north. The west boundary is demarcated by Interstate 5 and the east boundary varies from one to four miles east of Interstate 5. The Western Pacific Rail Line traverses from north to south through the Study Area. The northern portion of the Study Area is located within Sacramento County and the southern portion is located within San Joaquin County. The entire Study Area is located within the Secondary Zone of the Delta.

Land Use

Within the Sacramento County portion of the Study Area, the project area has land use designations of Agricultural Cropland and Natural Preserve (Sacramento County 1993). A large portion of the Study Area includes a combining land use designation of Resource Conservation Area (Cosumnes River Preserve), which includes among its goals:

- Safeguarding and restoring the finest remaining example of California Valley oak riparian (stream side) ecosystem and its surrounding habitats.
- Restoring and creating freshwater wetlands to increase the Pacific Flyway's populations of migratory waterfowl.
- Demonstrating the compatibility of human uses-- particularly agriculture, recreation, and education-- with the natural environment.

The area is also part of the Open Space Planning for Sacramento County- designated as Critical Natural Areas, Resource Conservation Areas, and Agriculture (Sacramento County 1993). Generally the Cosumnes River Preserve is designated as Critical Natural Area, and the areas further north are designated for agriculture and resource conservation.

At the southern end of the Study Area is the town of Thornton, an agriculturally-oriented community with a population of approximately 2,400. Thornton is described in the San Joaquin County General Plan as “low-lying Delta islands, sloughs and large farms.” Development is constrained by peat and prime agricultural soils, lack of services and severe flood hazards. General Agriculture and Resource Conservation are the principal land use designations in the Thornton area (San Joaquin County 1995). According to the General Plan, if construction of new public facilities were feasible, a revision of the Thornton plan would be considered, as the areas could attract a larger share of San Joaquin County growth.

Adjacent to the northeast boundary of the Study Area is Franklin Field, a public use airport in South Sacramento County. While outside the boundary of the Study Area, Franklin Field is an active Sacramento County Airport, supporting aviation training, as well as crop dusters and local aviators. The flight lines for approach and takeoff overlap portions of the Study Area. County planning has recognized the airport is limited by incompatible adjacent uses, including wetlands and waterfowl habitat at the Cosumnes River Preserve (Sacramento County 1995).

Agriculture

Most of the Study Area is used for dry pasture, dairy, hay and orchard crops. The areas bordering the Cosumnes River and within the Cosumnes River Preserve are irrigated for rice ponds and wetlands for waterfowl. With the exception of the town of Thornton, most of the Study Area south of the Mokelumne River is designated Prime Agriculture. Between Snodgrass Slough and the Mokelumne River the land is designated as Other Land by the California Department of Conservation’s Farmland Mapping and Monitoring Program, and north of Snodgrass Slough the area is mostly designated Farmland of Statewide importance. The majority of the study area in Sacramento County is under Williamson Act Contract. In San Joaquin County, Williamson Act lands are located within the central and southeastern portions of the Study Area.

Biological Resources

Since 1987, the Cosumnes River Preserve within the Study Area has been managed to restore and promote biological resources. As a result, the area supports a rich and diverse assemblage of wildlife as well as various threatened and endangered species. State or Federal threatened and endangered species known or likely to occur within the Cosumnes River Preserve include the following:

- Valley Elderberry Longhorn Beetle (Federal Endangered)
- Bald Eagle (State Endangered)
- Swainson’s Hawk (State Threatened)
- Sandhill Crane (State Threatened)
- Giant Garter Snake (Federal and State Threatened)
- California Tiger Salamander (Federal Threatened, Candidate State Threatened)

The riparian forest within the Cosumnes River Preserve supports an extraordinarily high diversity of resident and neotropical migrant bird species. The area is recognized as a major wintering ground for sandhill cranes and supports large numbers of waterfowl in the winter. The interspersed oak trees and agricultural savannahs support many nesting Swainson's hawks.

However, the areas north and south of the Cosumnes River Preserve are primarily dedicated to active agricultural production and do not include the diversity of biological resources present within the Cosumnes River Preserve.

Recreation

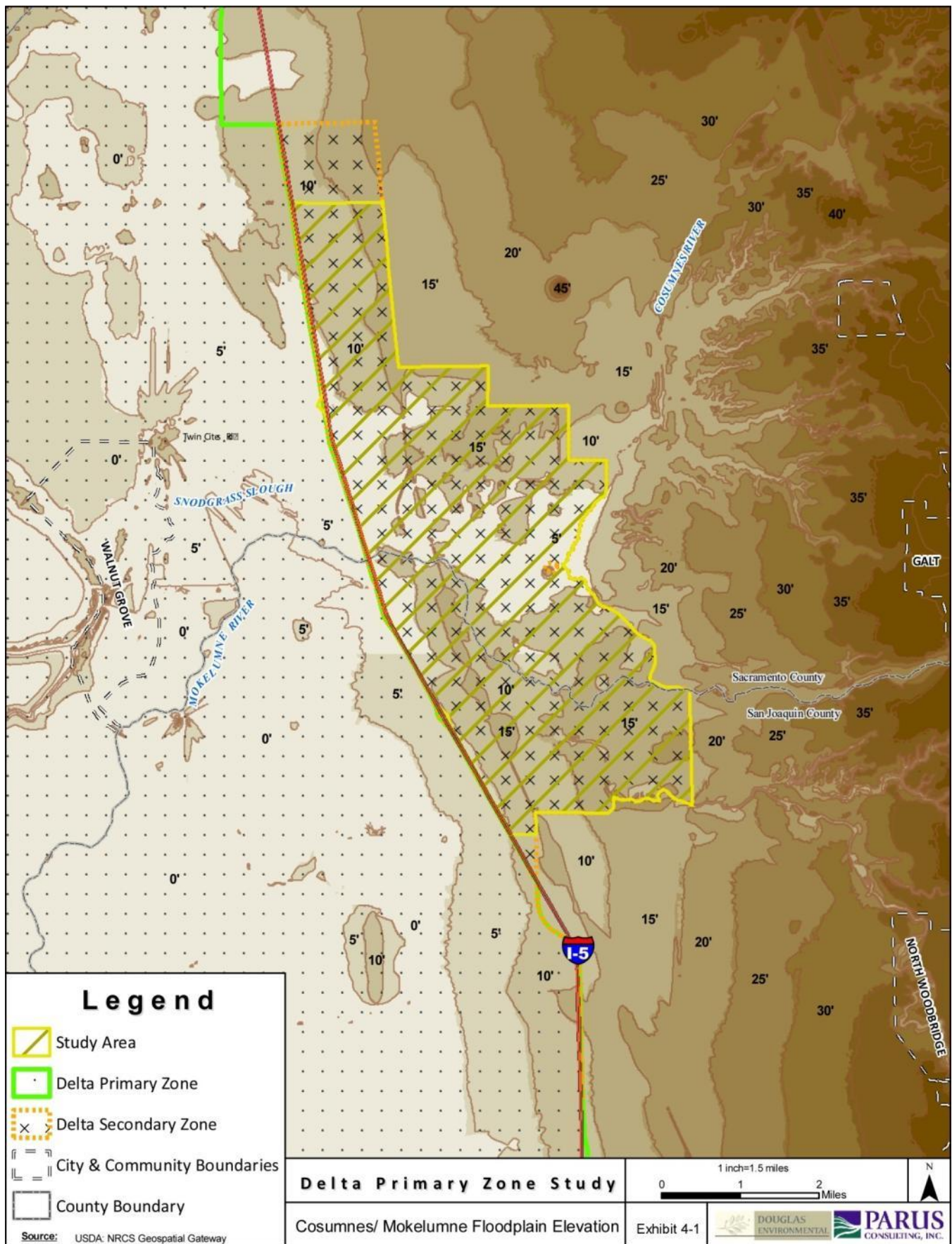
The central portion of the Study Area includes an abundance of recreational resources associated with the Cosumnes River Preserve. These recreational opportunities include canoeing, fishing, hiking, wildlife viewing, and photography. A few specially-designated areas have been set aside for limited hunting.

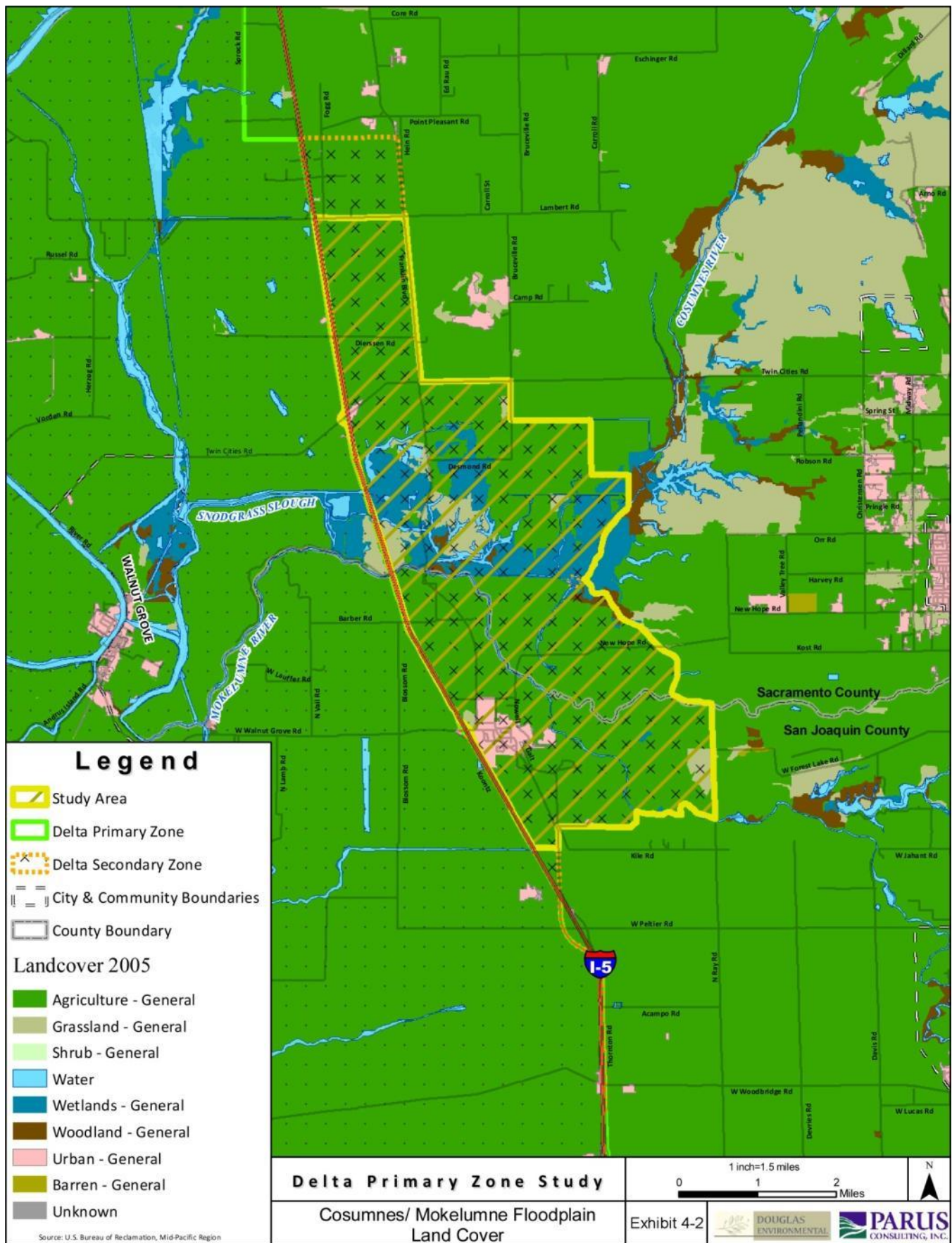
The Cosumnes River Preserve includes a visitor center, maintained nature trails, docent-led nature walks and canoe trips, and an active educational/outreach program. The total area protected by the Preserve through easements and fee-title ownership is approximately 45,859 acres. The properties are owned and managed by eight private and public organizations (Kleinschmidt Associates 2008).

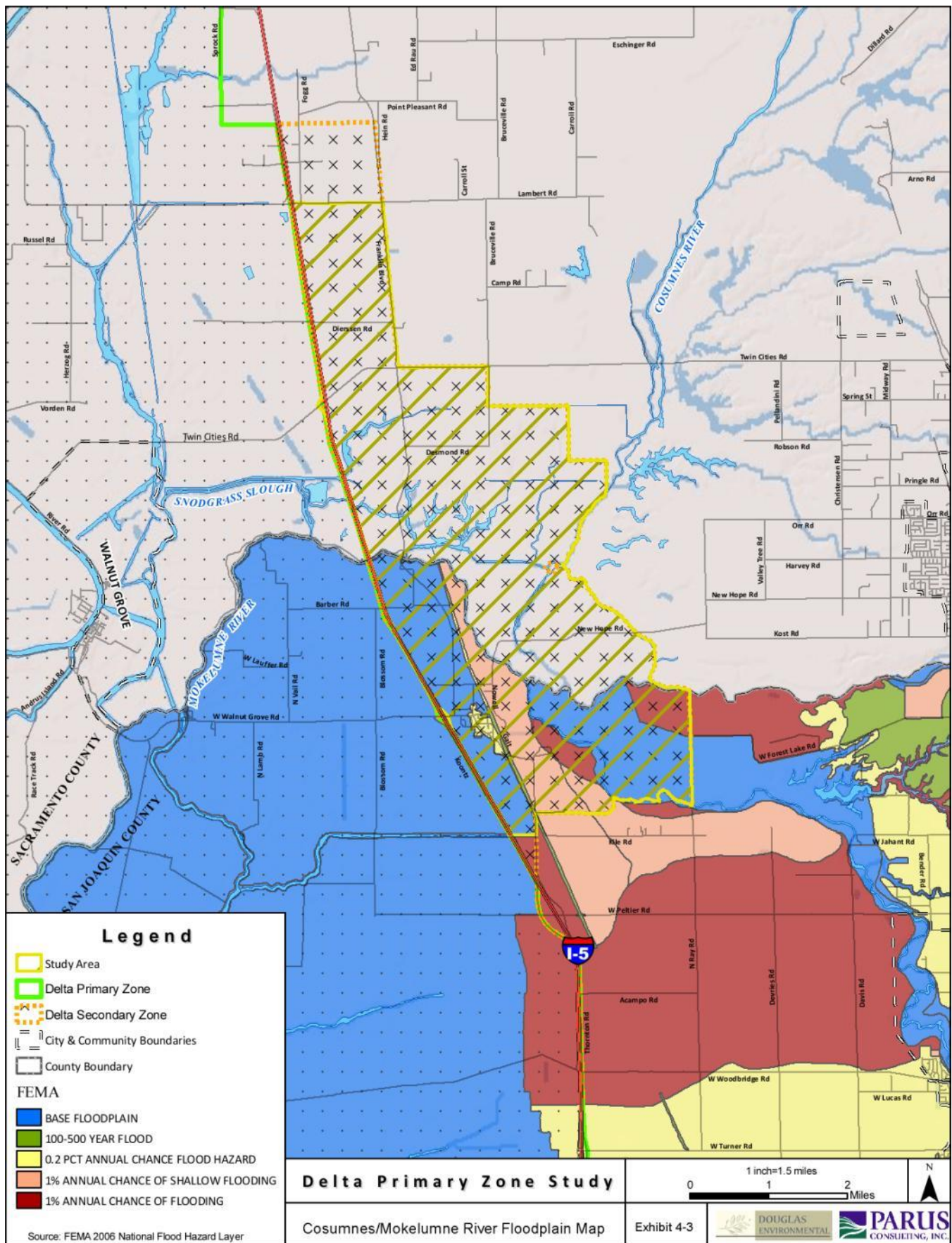
The areas north and south of the Cosumnes River Preserve are primarily dedicated to active agricultural production and the majority of the property is privately owned. Therefore, the recreational opportunities within these areas are relatively limited.

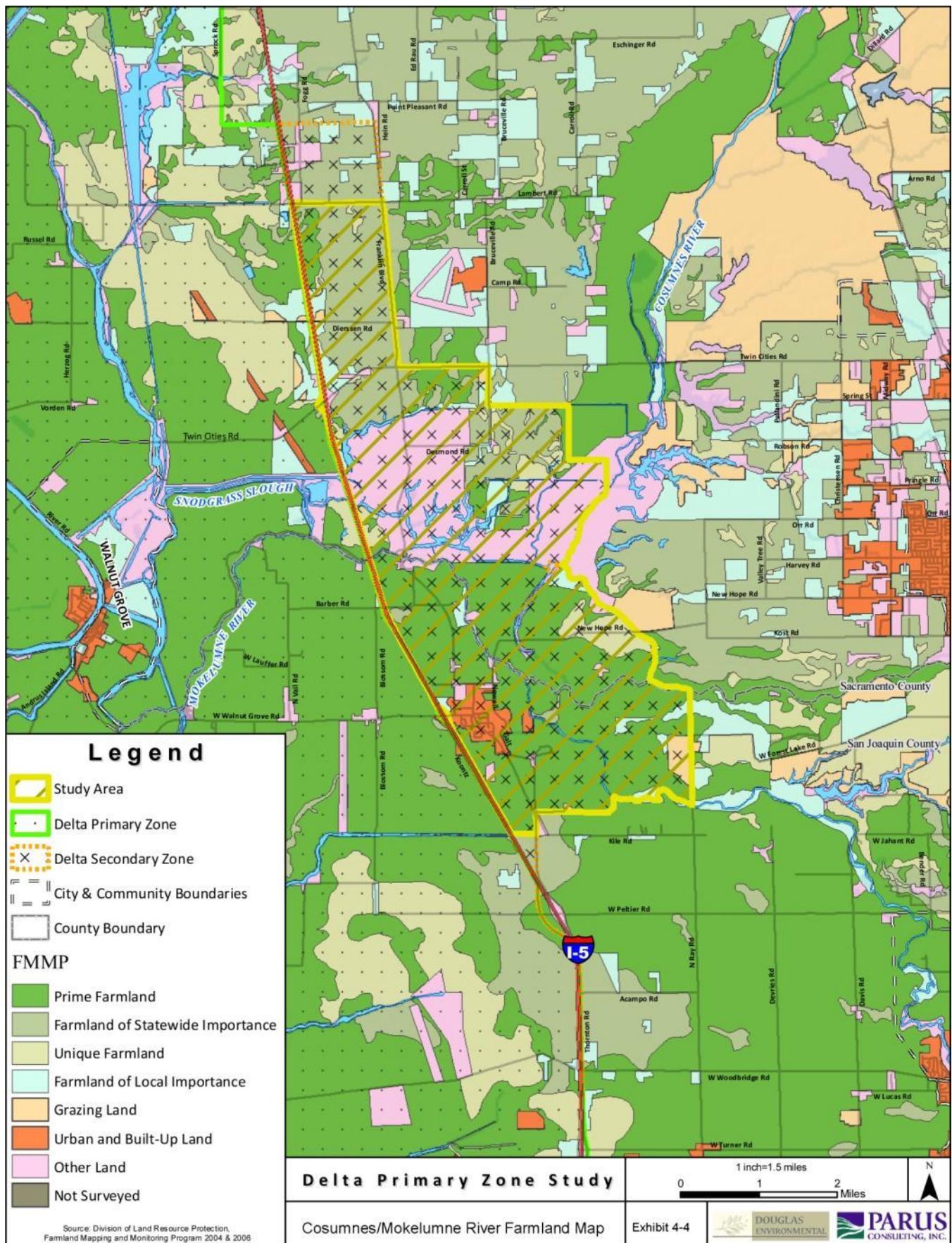
Flooding

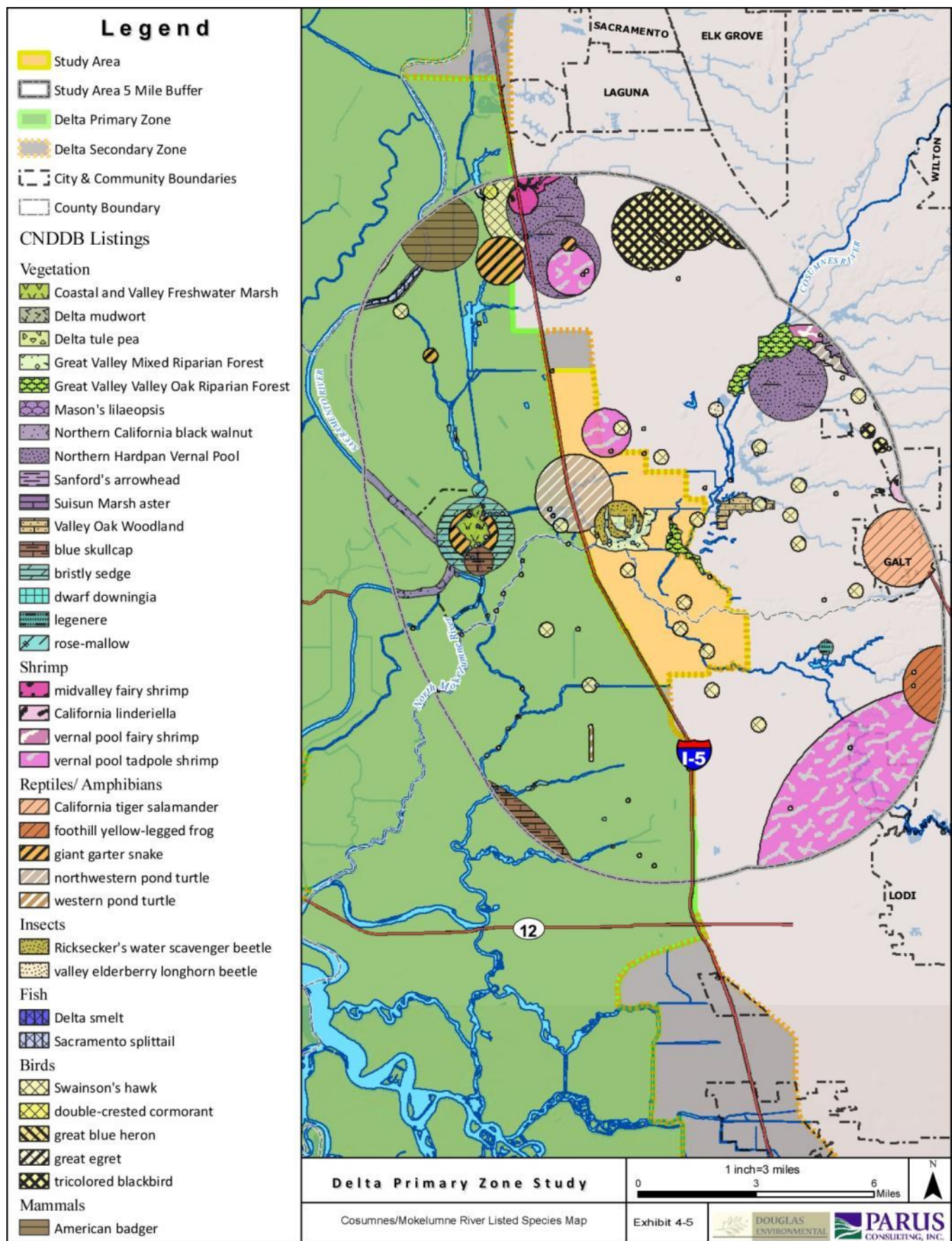
Flood risk is the most significant constraint on potential development in the Study Area. The Sacramento County General Plan shows all of the area "subject to flooding." However, FEMA flood maps are not available for the northern portion of the Study Area within Sacramento County. Thornton, located in the southern-most part of the Study Area was flooded by a levee break on the Mokelumne River in 1986. Most of Thornton and the portion of the Study Area within San Joaquin County lie within the 100-year floodplain. The area is protected by non-project levees along the Cosumnes River and southern boundary of New Hope Tract.











Andrus/Brannan Island

Overview

The Brannan-Andrus Study Area is located within the northern portions of Brannan and Andrus islands north of Highway 12. The two islands are divided from north to south by Jackson Slough Road with Brannan Island located west of Andrus Island. The Study Area does not include any major population centers. Approximately 90 residential units are located within the Oxbow Marina area, approximately 50 rural residences are located along W. Tyler Island Bridge Road, and approximately 15 rural residences are located along Terminous Road adjacent to Georgiana Slough. A small commercial area is located at the southeastern tip of Andrus Island at the southern end of Terminous Road and Highway 12. This commercial area includes storage facilities and the B & W Resort Marina. The Study Area is located south of Grand Island, west of Tyler Island, and east of Rio Vista, in Sacramento County.

The entire Study Area is located within the Secondary Zone of the Delta and is surrounded by land located within the Primary Zone, with the exception of the City of Isleton, which is located in the Secondary Zone.

Land Use

The primary land use in the Study Area is agriculture. The Sacramento County General Plan Land Use Diagram designates the majority of the Study Area as Agricultural Cropland (Sacramento County 1993). A small area located along Terminous Road adjacent to Georgiana Slough has a land use designation of Agricultural-Residential with 1 to 10 dwelling units per acre. In addition, the northern and western perimeter of the Study Area along the Sacramento River and the southeastern tip of Andrus Island at the southern end of Terminous Road and Highway 12 have a land use designation of Recreation. The Study Area is entirely within the bounds of the immense Rio Vista Gas Field, although well drilling pads and associated infrastructure make up only a small part of the land use within the Study Area, which is mainly agriculture.

Agriculture

The California Department of Conservation's Farmland Mapping and Monitoring Program identifies the majority of the agricultural lands within the Study Area as Prime Farmland. In addition, the vast majority of the agricultural lands include active Williamson Act contracts. Agriculture is the dominant land use within the Study Area and is a primary source of employment for the residents of the Study Area. The average parcel size within the Study Areas is 22.453 acres.

Biological Resources

The agricultural fields within the Study Area provide valuable foraging habitat for local wildlife, including avian species migrating along the Pacific Flyway. However, due to the intensive agricultural uses on the islands, no occurrences of special status species are identified in the California Natural Diversity Database (CNDDB) maintained by the California Department of Fish and Game.

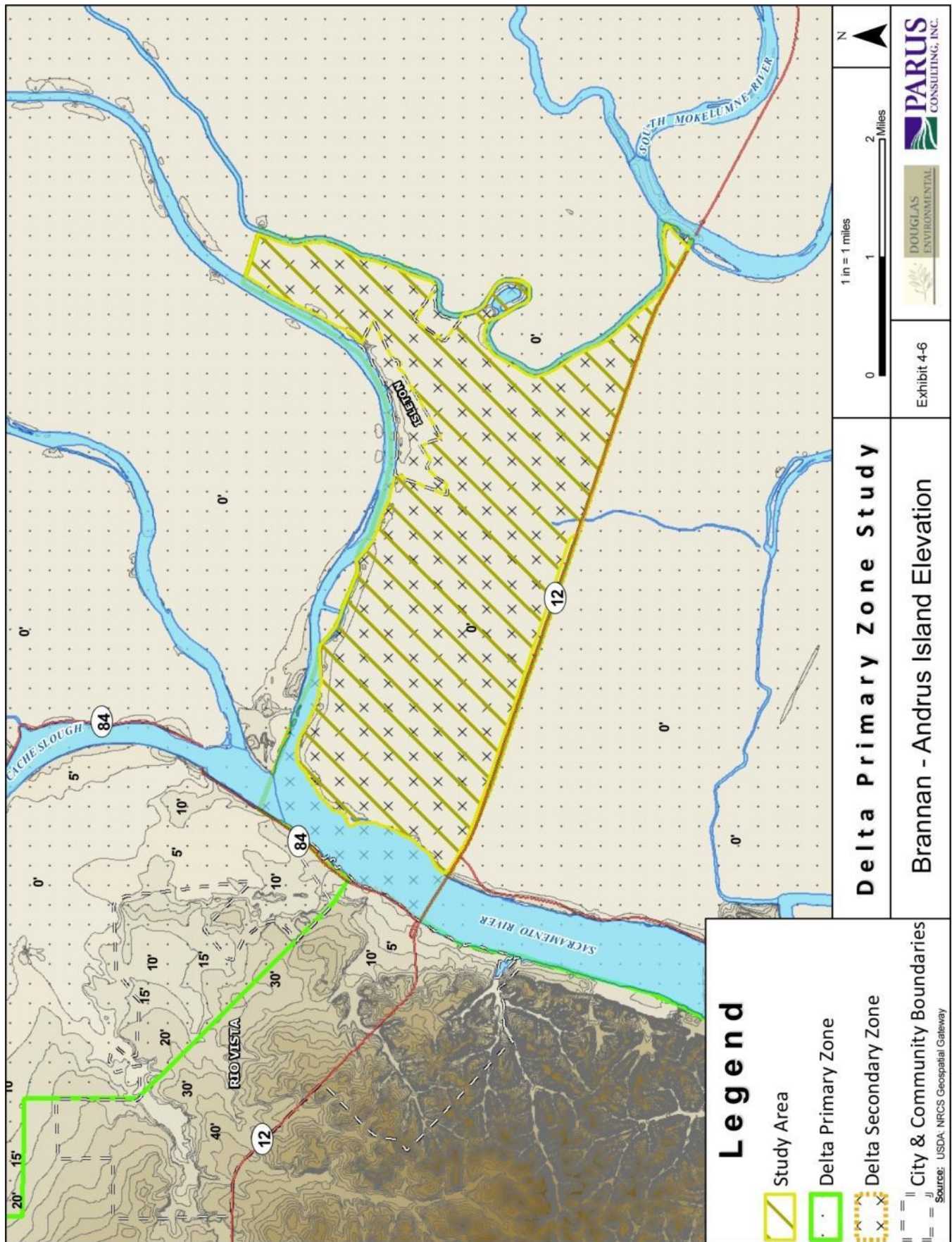
Recreation

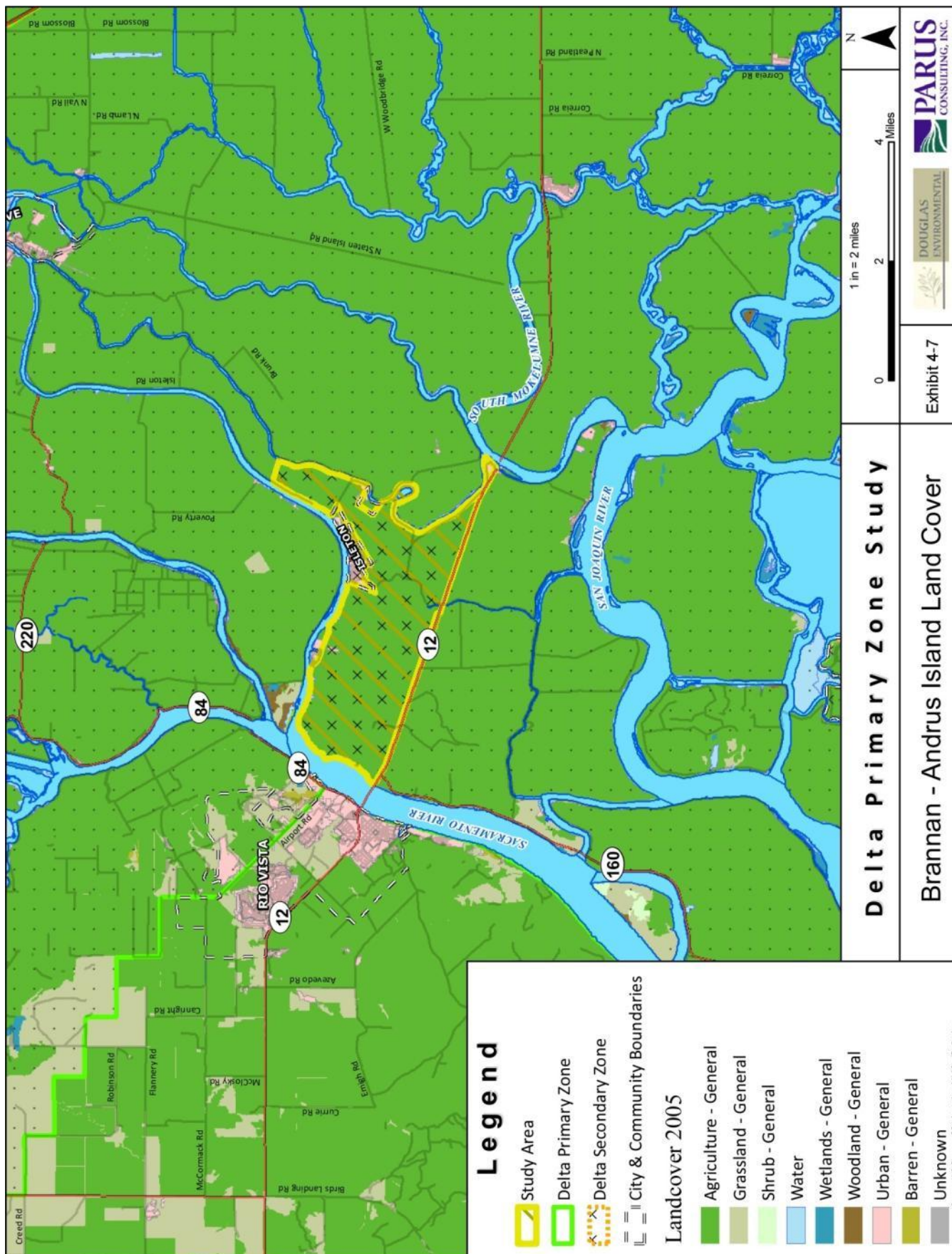
The Study Area includes several resorts and marinas. From these resorts and marinas, residents and visitors partake in water-based recreation activities, such as boating and fishing. Opportunities for passive recreation, such as wildlife viewing, are provided at these access points, as well as along major roadways. The interior of the study area is actively farmed and has limited access; therefore, these areas provide limited opportunities for direct recreation.

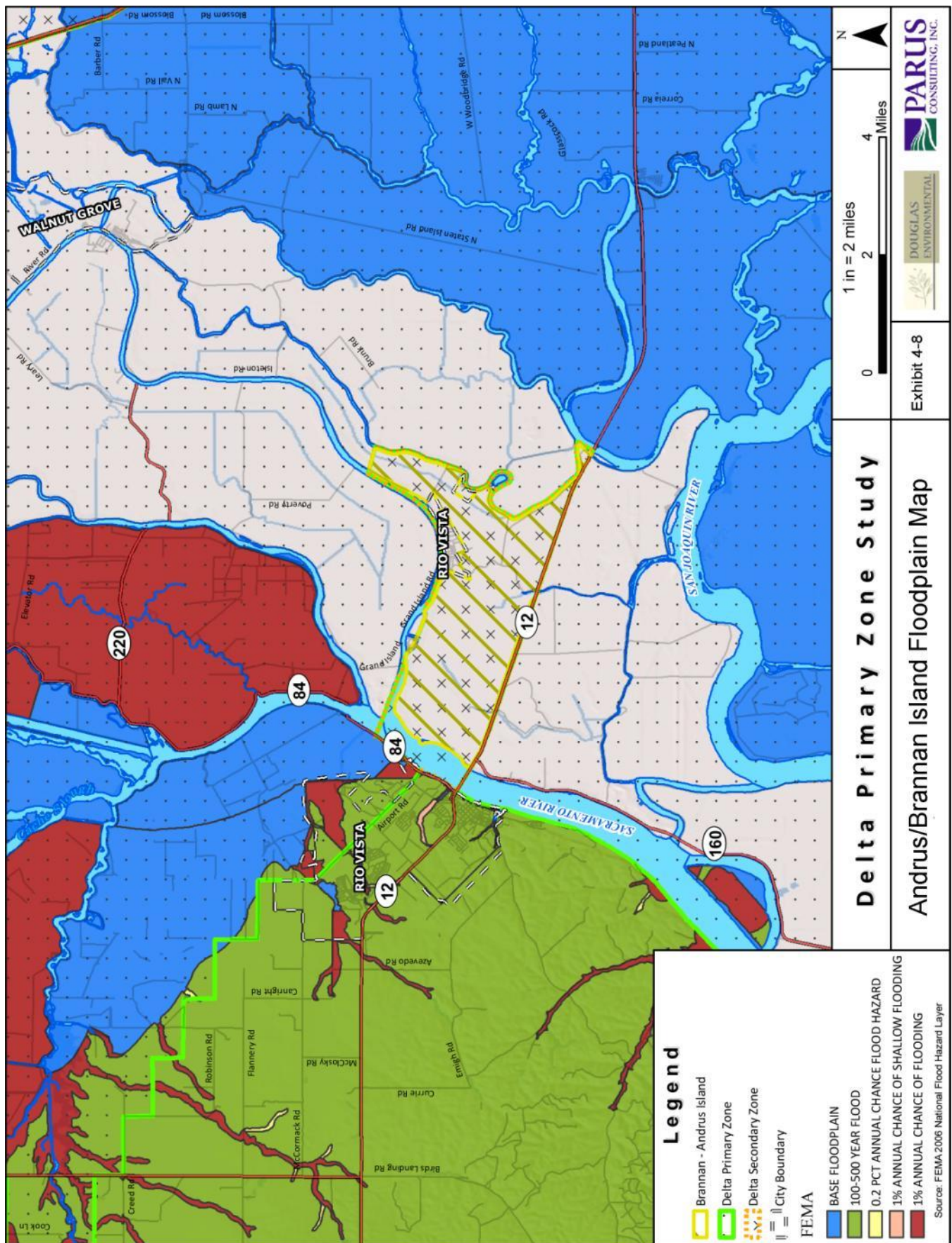
The Brannan Island State Recreation Area (225 acres), which is owned by the California Department of Recreation, is located on the southern tip of Brannan Island but is not within the Study Area. This developed park facility provides boating, camping, swimming, wind-surfing, and other recreation opportunities.

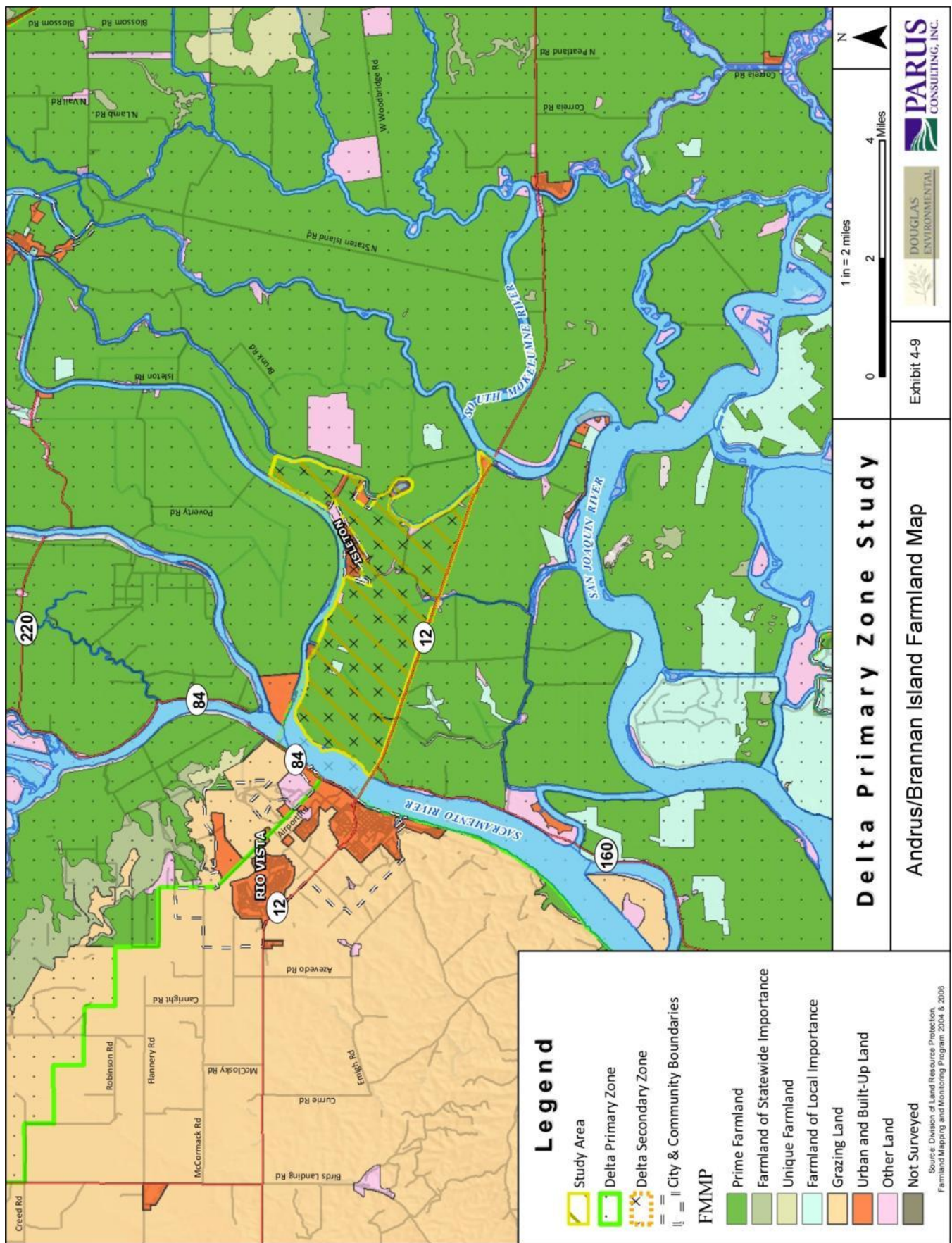
Flooding

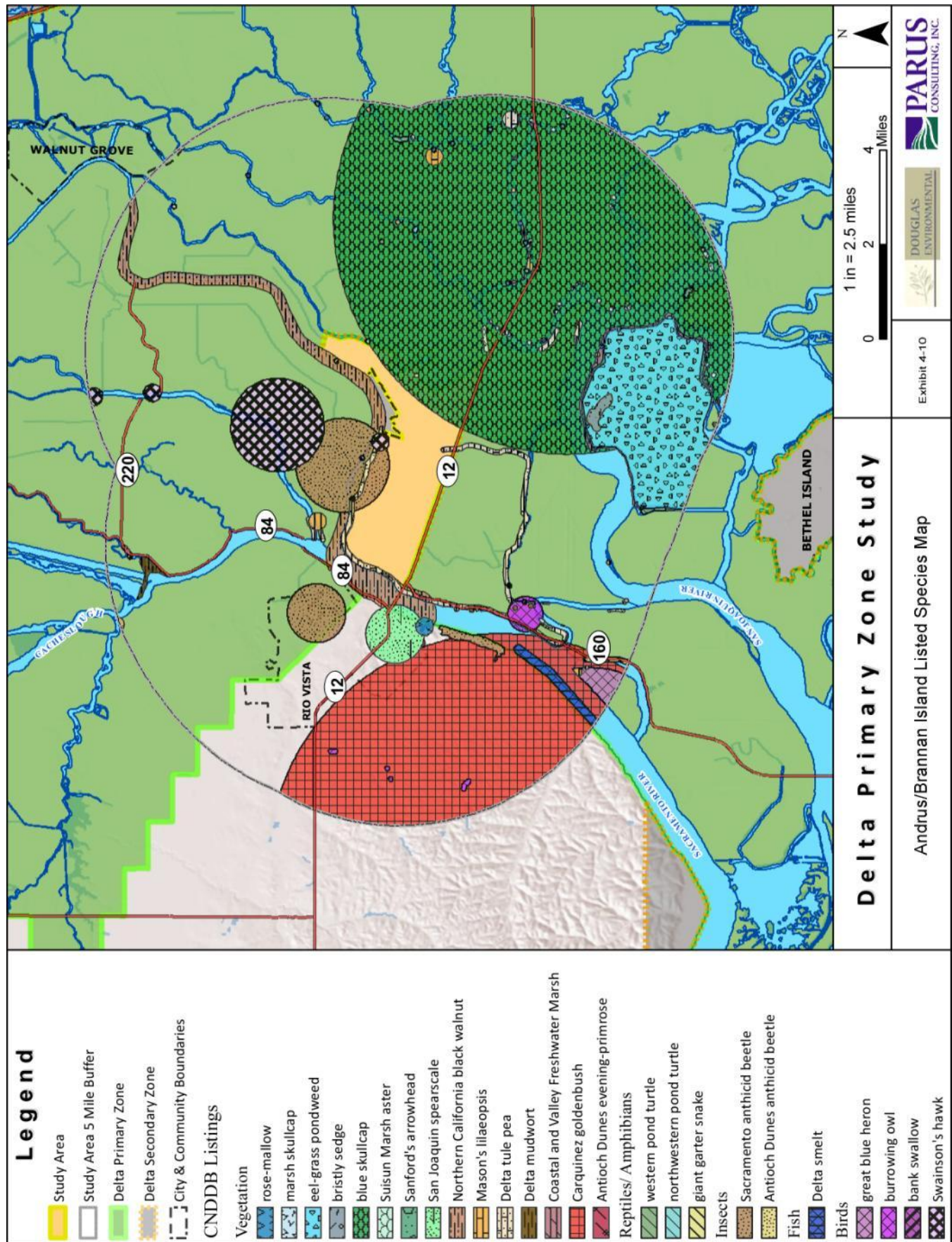
The majority of the Study Area is below sea level with elevations on the islands as low as -10 feet. Located within a 100-year floodplain, the Study Area is protected by levees that were constructed in the late 19 and early 20th centuries. These levees are not adequate to protect the Study Area during 100-year storm events. Therefore, the entire Study Area is extremely susceptible to the risk of flooding.











Isleton

Overview

The City of Isleton is located in the very southern portion of Sacramento County along the Sacramento River. The approximately 244-acre Study Area includes the entire incorporated portion of the city, including the developed portion of the city located along the Sacramento River and the city's wastewater treatment plant property (containing wastewater treatment ponds) located along Georgiana Slough. The City is located on Andrus Island, on the eastern edge of the Rio Vista Gas Field.

The City's population as of the 2000 census was 828 and the City includes many preserved 19th century era storefronts along its main street, some of which show distinct Chinese influences. Chinese began immigrating to Isleton around 1875, and at its peak, the Chinese population numbered approximately 1,500.

The entire Study Area is located within the Secondary Zone of the Delta and is surrounded on the east, south and west by areas within the Secondary Zone. The area to its north on Grand Island is within the Primary Zone.

Land Use

The City is almost entirely developed with urban uses and includes a mix of commercial, residential, public facility and park land uses. The City has a total of 384 housing units and includes commercial uses along Highway 160/River Road as it traverses across the northern boundary of the City adjacent to the Sacramento River.

Agriculture

The Study Area is almost entirely urbanized and contains only limited areas for agricultural uses. In the past, industrial areas within Isleton supported the surrounding agricultural community. Today, most of this industry is gone.

Biological Resources

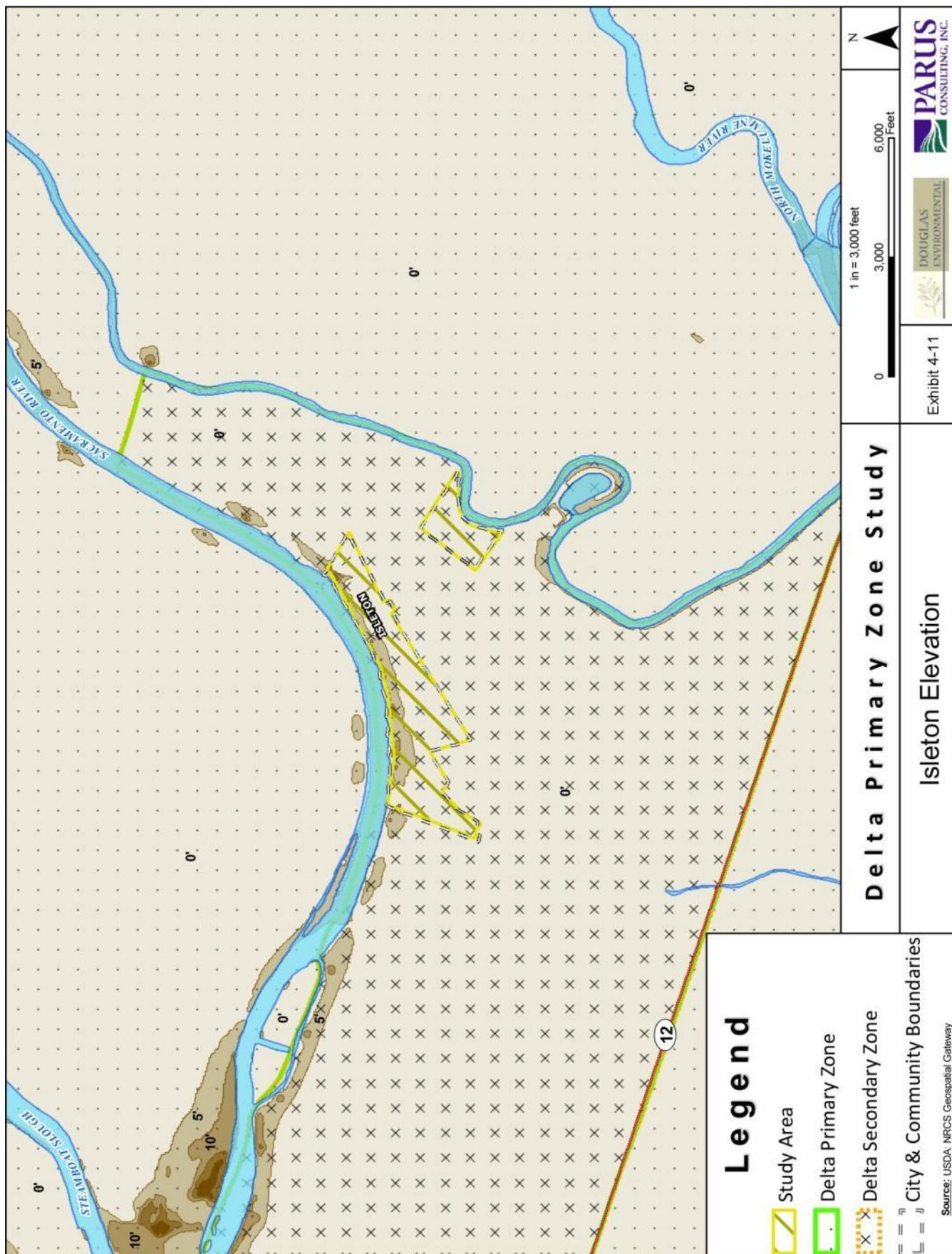
The biological resources within the Study Area are characteristic of an urbanized City within the Delta. Much of the native vegetation was removed with development of the City. Ornamental landscaping is the dominant vegetation type. However, some riparian habitat is located on the City's northern border along the Sacramento River. This area is identified in the California Natural Diversity Database as providing potential habitat for California Black Walnut. However, development along the City's waterfront limits the extent of this riparian habitat.

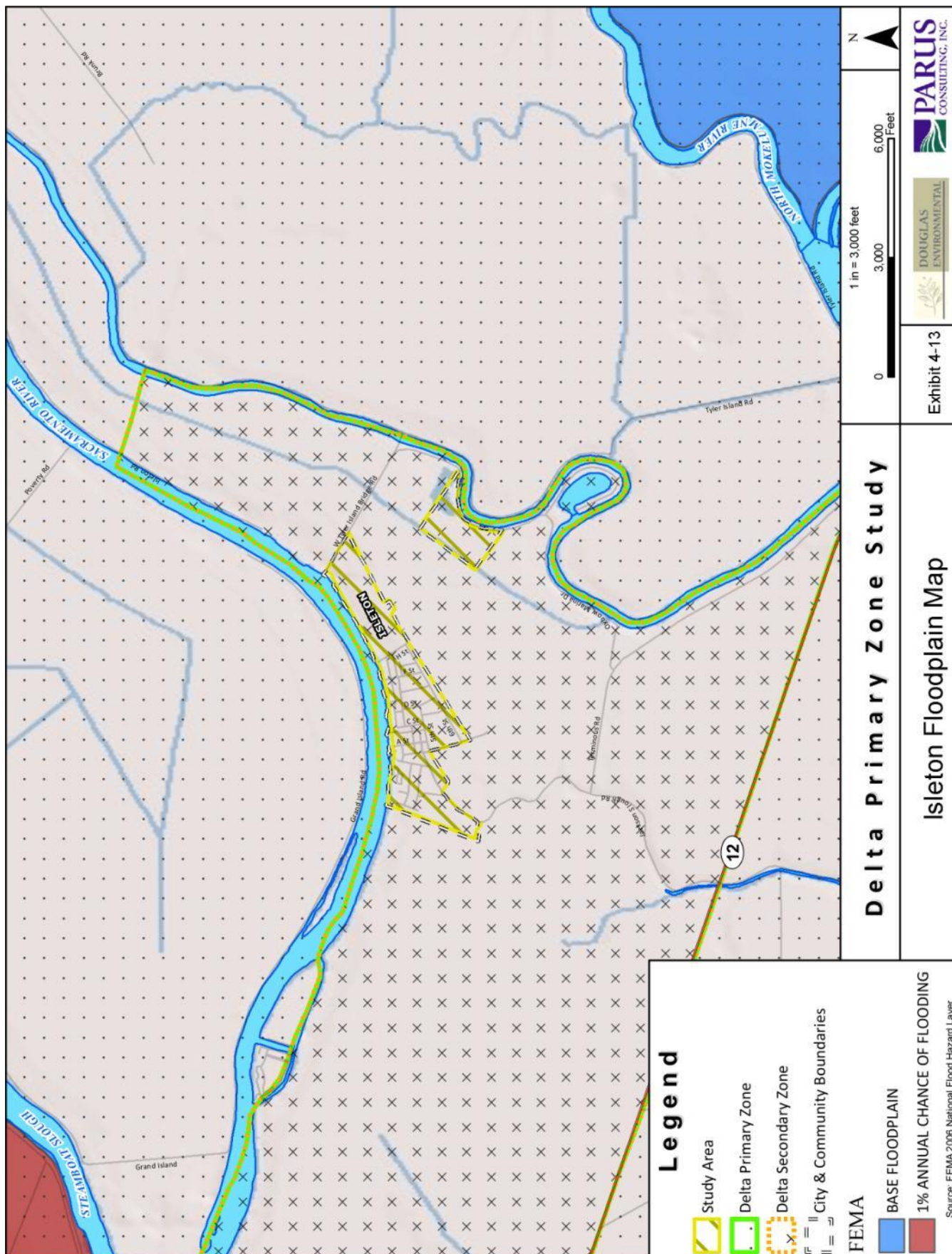
Recreation

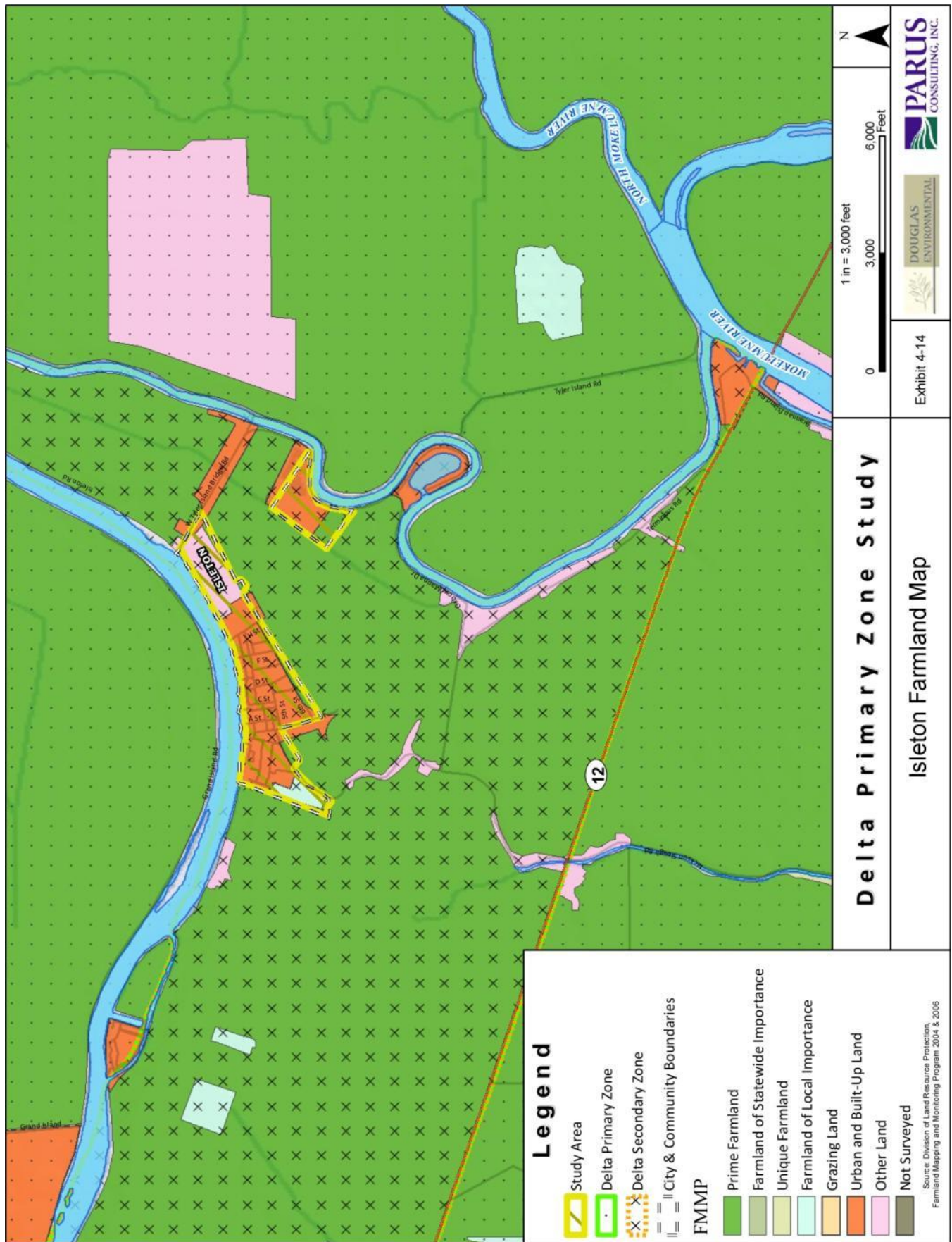
The Isleton area provides recreational opportunities associated with its access to the Sacramento River including boating, fishing and site seeing. In addition, the City includes local parks, shopping, restaurants, and lodging for recreational visitors. The area is a convenient destination from area population centers (Sacramento and San Francisco) and easily accessed both by Highway 160 and via the Sacramento River. Isleton is also known for its festivals including the Crawdad Festival held annually over the Father's Day weekend.

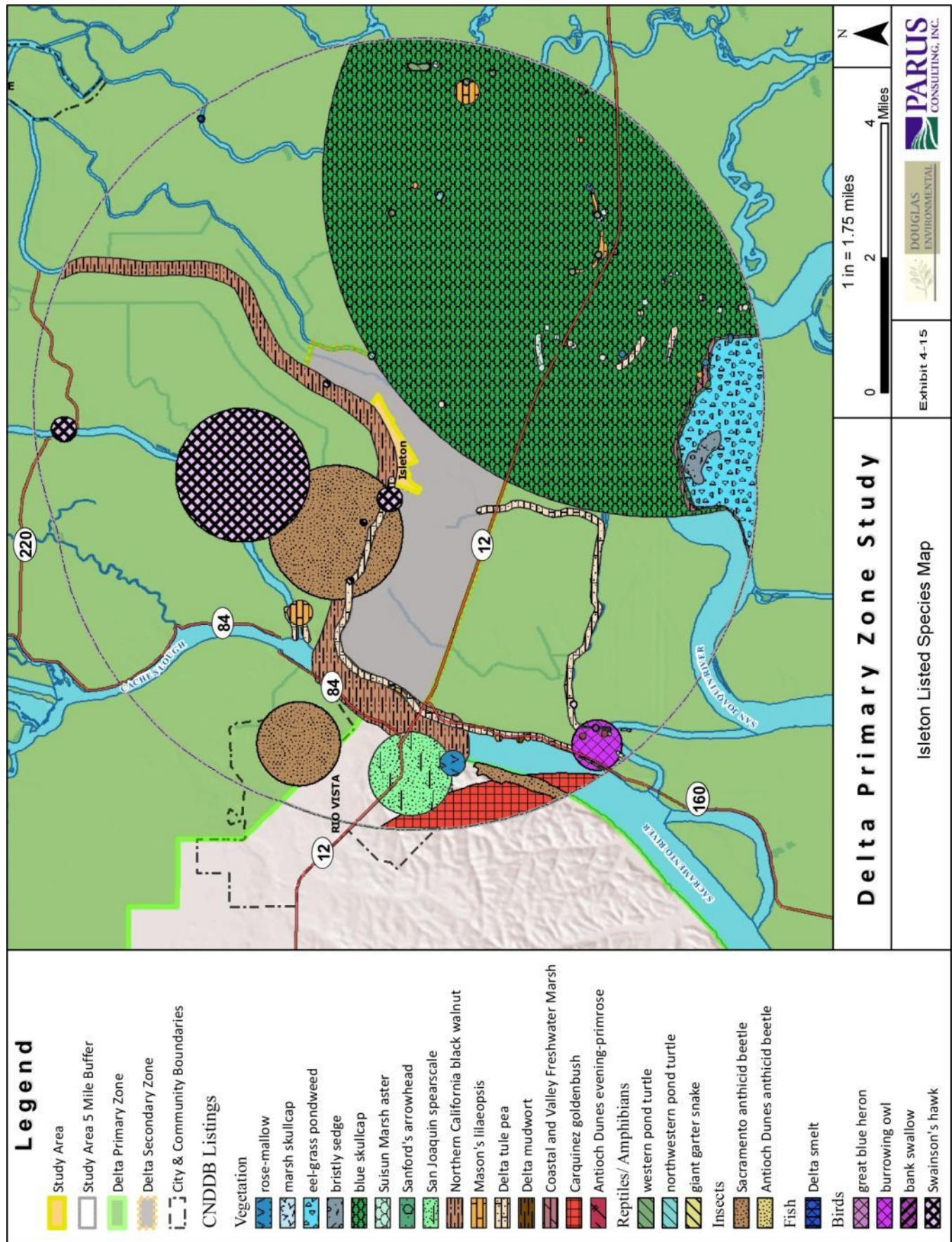
Flooding

The average elevation of the Study Area is approximately 5 feet above sea level. Located within a 100-year floodplain, the Study Area is protected by levees that were constructed in the late 19 and early 20th centuries. These levees are not adequate to protect the Study Area during 100-year storm events. Therefore, the entire Study Area is extremely susceptible to the risk of flooding.









Rio Vista

Overview

The Rio Vista Study Area includes the entire incorporated City of Rio Vista. Located in Solano County on the west side of the Sacramento River, Rio Vista is bisected by Highway 12 and includes a mix of industrial, commercial and residential land uses. The majority of the 4,412-acre Study Area is not located within the Legal Delta. The area to the southwest of Airport Road and west of Liberty Island Road is located outside of the Legal Delta and the area to the northeast of Airport Road is located within Primary Zone of the Legal Delta. The portion of the Study Area in the Primary Zone is used primarily for the local airport, the City's Northwest Wastewater Treatment Plant and landfill facilities, and for other industrial purposes. The area of the City located outside of the Primary Zone includes the City's downtown and residential areas. As of the 2000 Census, the population of Rio Vista was 4,571.

Rio Vista is conveniently located between two major population centers: San Francisco and Sacramento. Historically, this geographic location made the city a key stop for ships en route to the Port of Sacramento. The City's downtown still supports local merchants and restaurants. In the last decade, there has been a push for urban-build out of Rio Vista. Subdivisions were built on the outskirts of town. Recently, these suburbs have had mixed success and have caused some financial hardship for the City.

Land Use

The Land Use Element of the City's General Plan allows for development at urban densities out to the city limit. (City of Rio Vista Community Development Department 2002). Within the area designated as Primary Zone, the land use designations in the General Plan included Industrial/Employment District General (I/E[G]), Industrial/Employment District Limited (I/E[L]), Agricultural/Open Space (AG/OS), Open Space (OS), Airport/Transportation Special District (AT), and Study Area Special District (SA). The majority of this area has been developed with airport, light industrial, and public uses with the remaining area containing undeveloped grazing lands.

The City recently acquired a 28-acre former Army Reserve Base near the City's southern boundary. The City is a party to a "Memorandum of Understanding" with the California Department of Water Resources regarding the development of a 12-acre Science Center and with the U.S. Fish and Wildlife Service regarding the development of an 8-acre Fish Hatchery on the former Army Reserve Base. The remaining 8 acres of the Base are proposed to be used for recreational purposes, hotels, a conference center, boat docking, and other uses.

Agriculture

The portion of the City within the Primary Zone is used primarily for industrial and public uses. However, it does include a small area of agricultural land that is currently used for cattle grazing. This agricultural land is used primarily as a buffer area around the airport and is not considered high value agriculture. The areas of the City located outside of the Primary Zone are dedicated to urban uses including the commercial and residential neighborhoods of the City.

Biological Resources

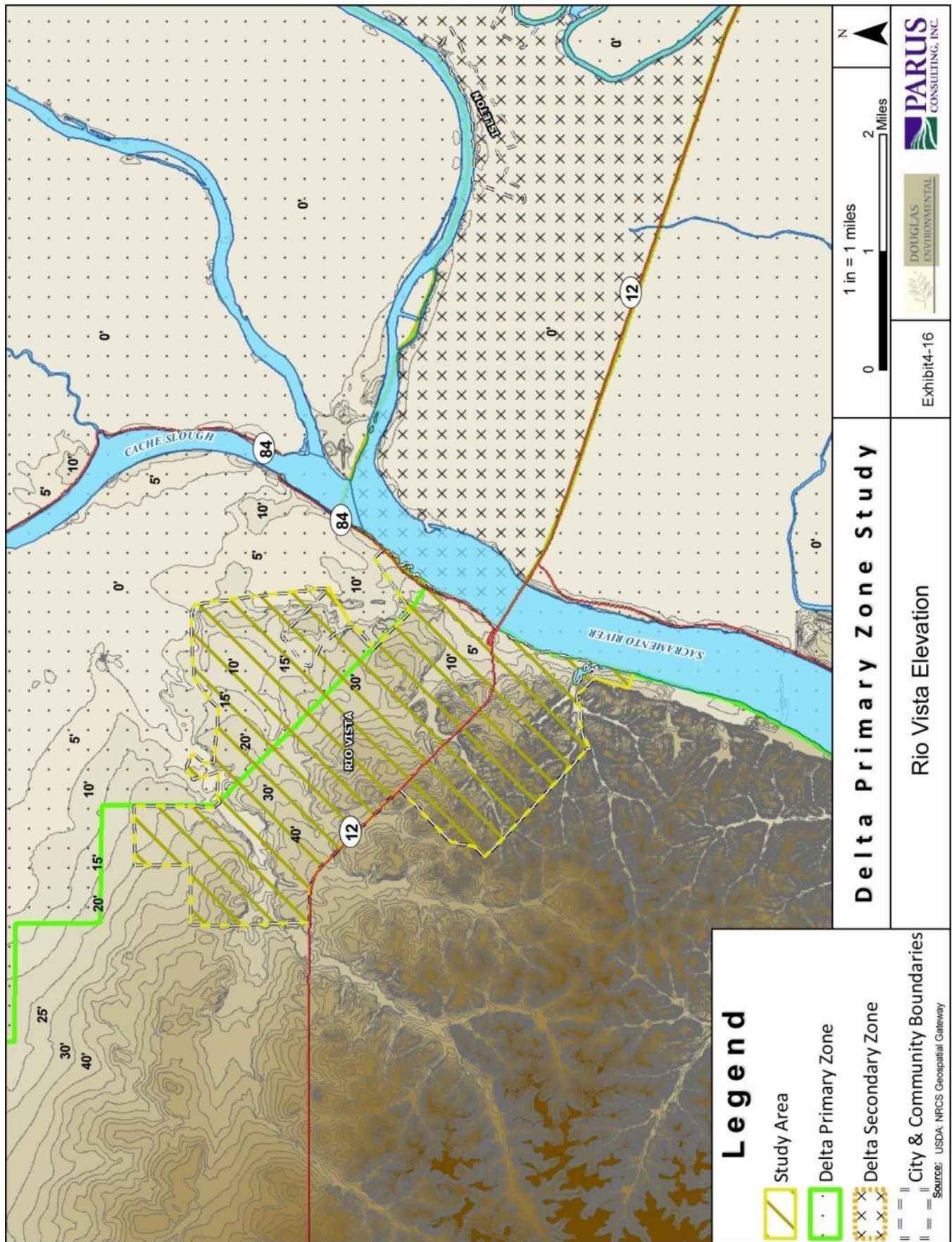
The majority of the City includes developed uses. Therefore, the majority of the biological resources historically present within the City have been removed by development. However, the California Natural Diversity Database identifies the Study Area as potential habitat for two special status plants: San Joaquin spearscale (which is on the California Native Plant Society [CNPS] List 1B) and Carquinez goldenbush (a federal species of concern and on CNPS List 1B); as well as Sacramento anthicid beetle (a federal species of concern). The agricultural lands surrounding the City also provide foraging habitat for sensitive raptors and other wildlife species.

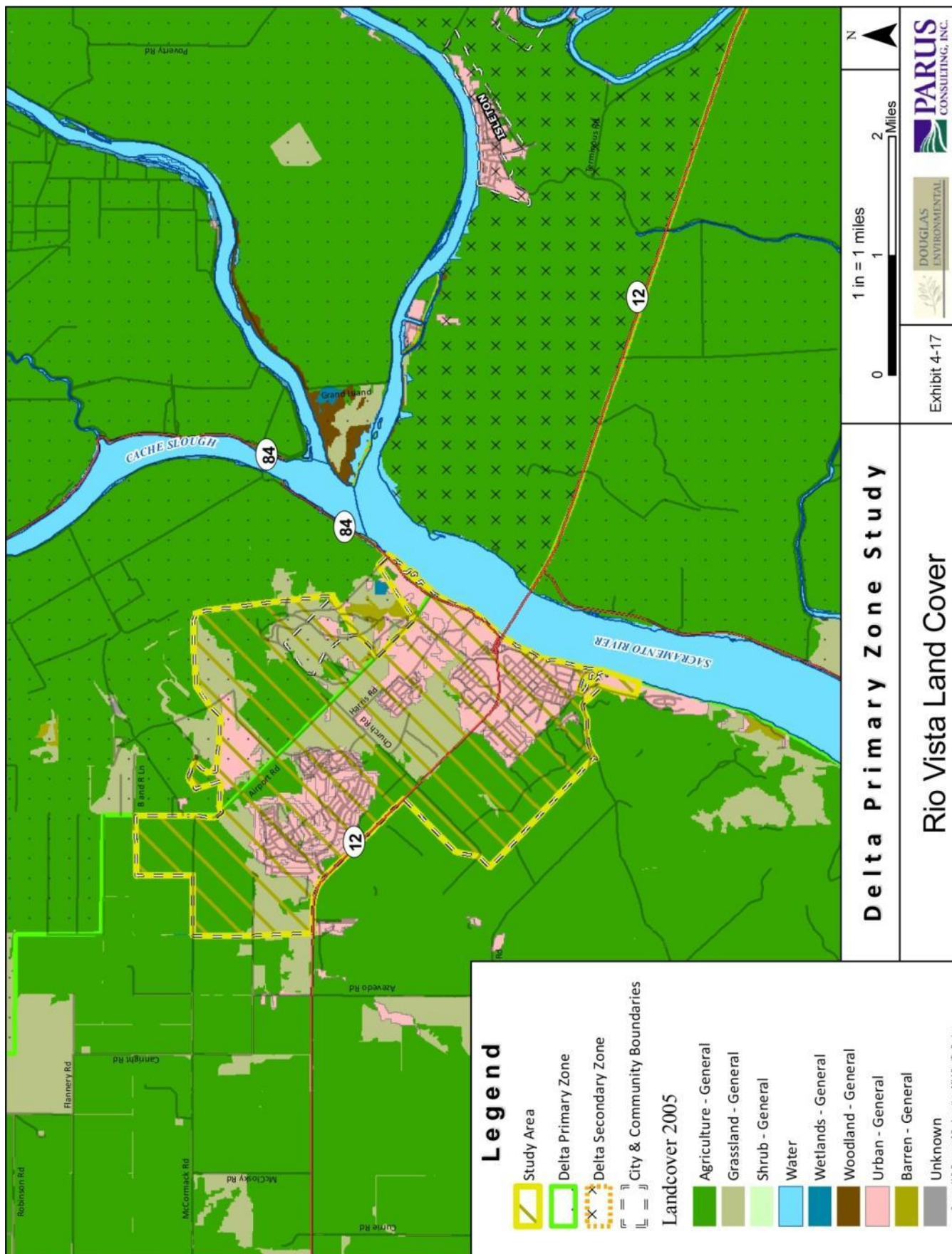
Recreation

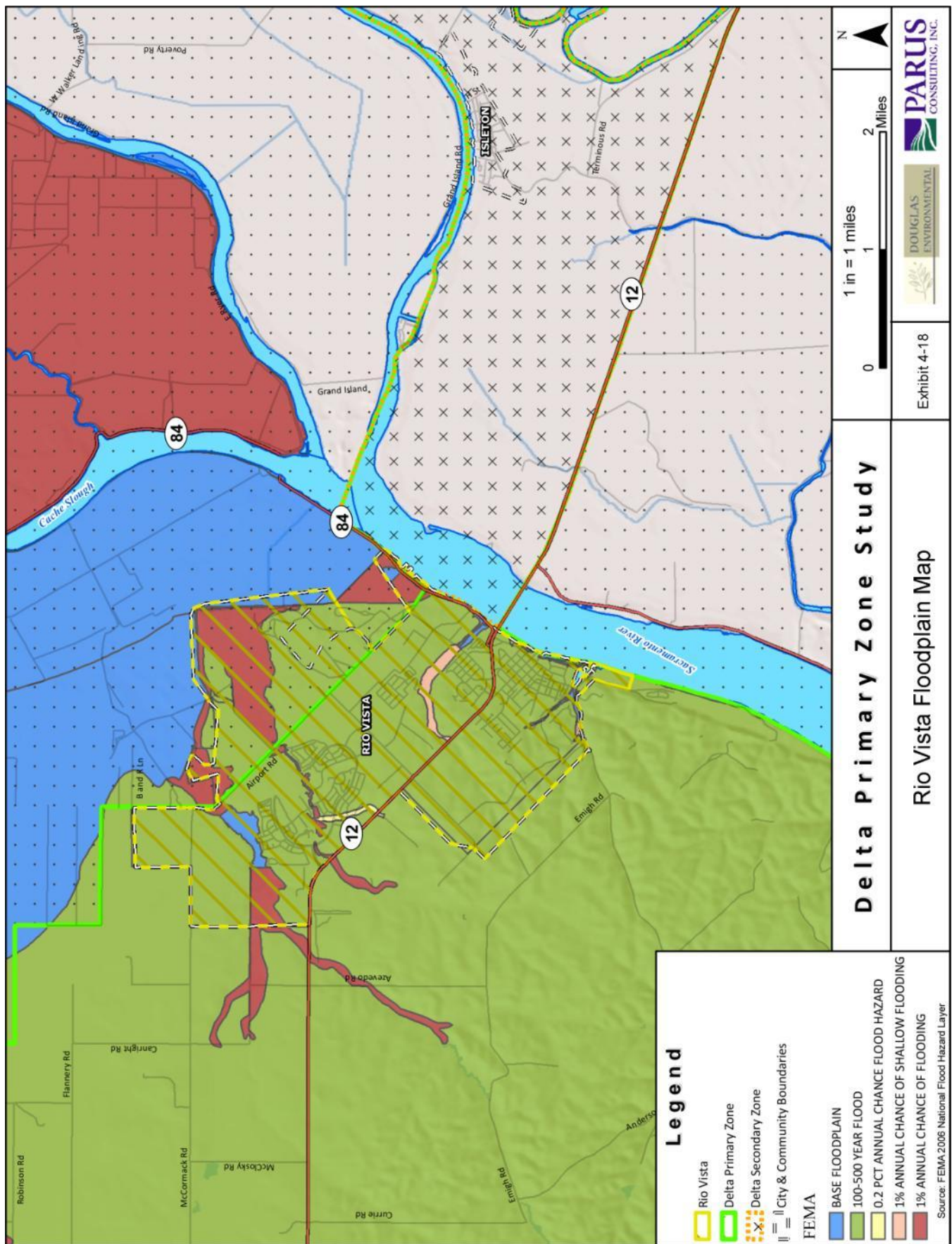
Due in large part to the City's waterfront location, there are several recreational opportunities available, including: windsurfing, water-skiing, jet skiing, boating, and fishing. Rio Vista is known to have some of the best sport fishing in the state and is the host for the West Coast's oldest Striped Bass Derby each October (Rio Vista Chamber of Commerce). In addition, the City includes community parks that are available to the public.

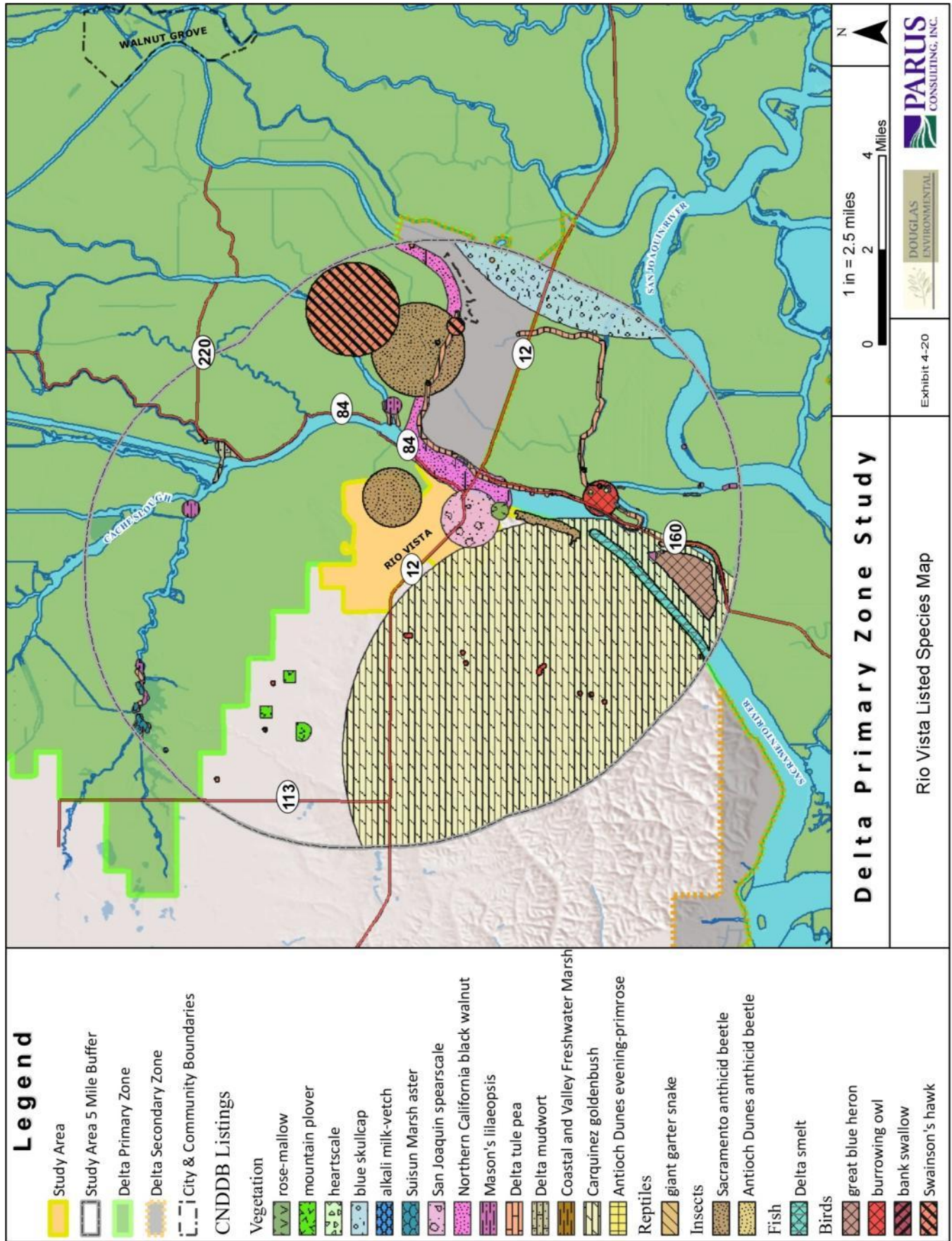
Flooding

The majority of the City is located outside of the 100-year flood zone identified by the Federal Emergency Management Agency. However, the agricultural lands within the Primary Zone are located within the 100-year flood zone as are the light industrial uses located along the Sacramento River north of Airport Road.









Bethel Island

Overview

Bethel Island is located in the northeastern portion of Contra Costa County, in the Secondary Zone of the Legal Delta. The area to the north, east, and west is in the Primary Zone of the Delta; the area to the south is in the Secondary Zone.

The approximately 3,500-acre unincorporated island has an average elevation of approximately 7 feet above mean sea level and is surrounded by 14.9 miles of earthen levees. Access to Bethel Island is provided by boat or by a bridge that connects Bethel Island Road to Cypress Road to Highway 4 in Oakley. Approximately 2,300 people live on Bethel Island in approximately 1,345 residential structures and four mobile home parks. The island includes 13 commercial marinas, a commercial business area and agricultural land (BIMID 2010). The island has a population density of 449.47 people per square mile.

Land Use

The Contra Costa General Plan Land Use Map (2004) identifies several land use types on the island, including: Parks and Recreation, Open Space, Agricultural Lands, Commercial Recreation, Commercial, Single Family Residential (low and high density), Mobile Home, and Multiple Family Residential (low). Agricultural Lands and Single Family Residential (low) comprise the majority of the land use. The residential use of the Study Area is concentrated on the eastern portion of the island; consequently, average parcel size was observed to be smaller on this half of the Study Area.

A large development project, identified as the Delta Coves Subdivision, was constructed on Bethel Island between March 2006 and May 2008. This 320-acre residential waterfront development includes 494 residential lots with water access and a marina. Construction of this water-oriented development required a breach of the island's existing perimeter levee, substantial excavation to create the marina, and the placement of a perimeter levee system around the entire development. Due to the downturn in the housing market, however, residential units were never constructed on the site and it remains vacant and surrounded by a chain link fence.

The Contra Costa General Plan includes a number of policies for the Bethel Island Area that are intended to limit development on the island. These policies include the following:

- 3-56. New residential development in the on-island area shall be limited at this time to approved development and one dwelling unit per parcel.
- 3-57. Additional residential density in the on-island area may be considered through subsequent amendment at the discretion of the Board of Supervisors, provided at least the following are accomplished:
 - (a) a financing mechanism is fully and completely assured for improvements to the entire perimeter on-island levee system;
 - (b) the levee improvement plans are approved by Bethel Island Municipal Improvements District and the Army Corps of Engineers; and

(c) subsidence, as well as impacts on wetlands, are adequately mitigated.

- 3-64. To retain the characteristics of Bethel Island that make it a unique place in the Delta with its own separate identity, development shall be limited to a low overall density, and open space buffers shall be required. In addition, agricultural, open space, and wetland areas, along with rare plant communities, shall be preserved and protected.

Agriculture

The California Department of Conservation's Farmland Mapping and Monitoring Program identifies the majority of the agricultural lands on Bethel Island as Farmland of Local Importance. These agricultural lands are primarily used for livestock grazing and are capable of producing dryland grain on a two-year summer fallow or longer rotation. An area containing Prime Farmland is located in the northern portions of the island. Prime farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. In addition, the Contra Costa General Plan (Figure 8-2) identifies the central, northern and western portions of the island as Important Agricultural Areas. The perimeter of the island is primarily dedicated to residential uses.

Biological Resources

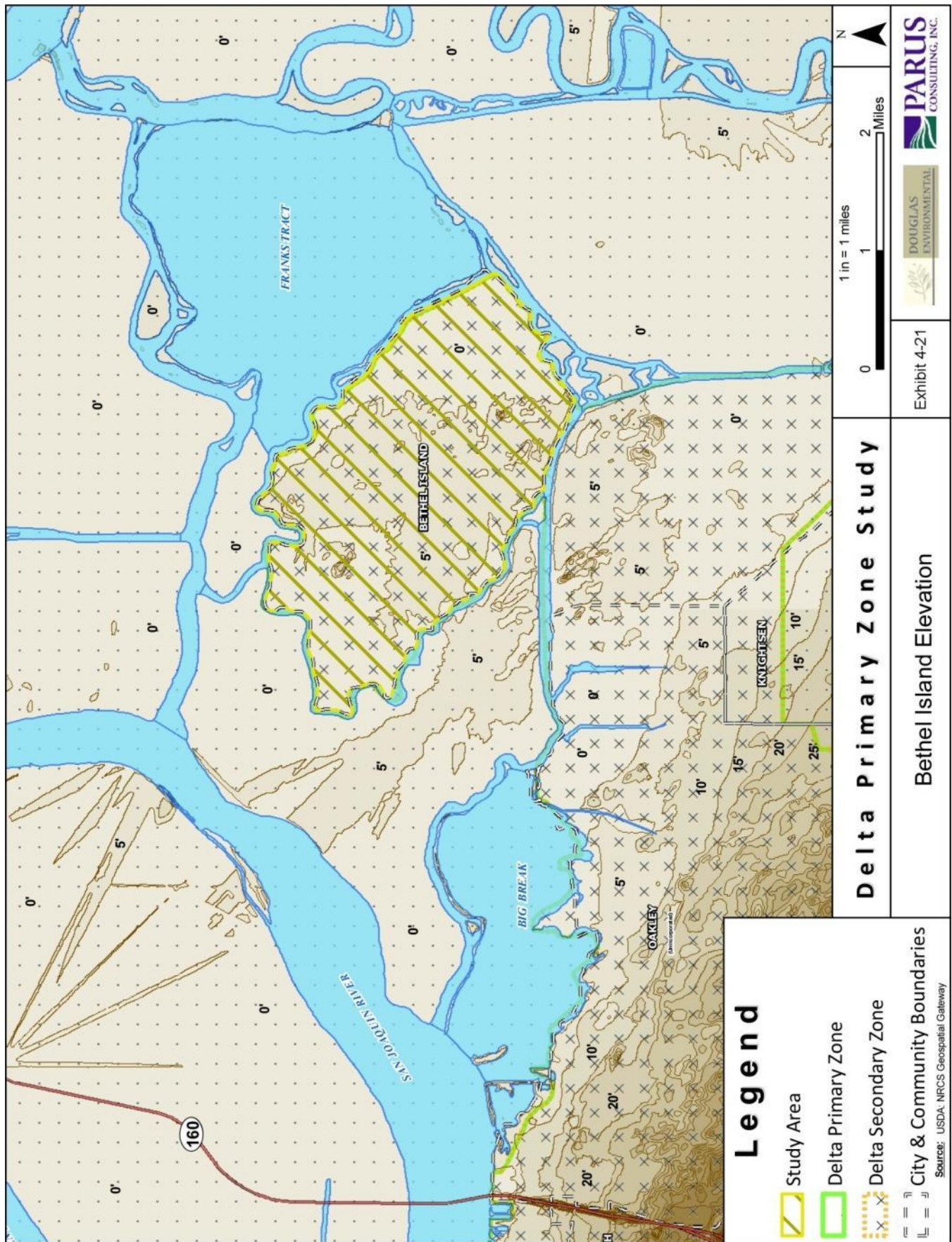
The Bethel Island planning area supports substantial acreage of seasonal and permanent wetlands. Over a square mile of ruderal wetland/upland are also found on the planning area. These have high values as biological habitat and are considered critical natural resources by the U.S. Army Corps of Engineers and other resource agencies.

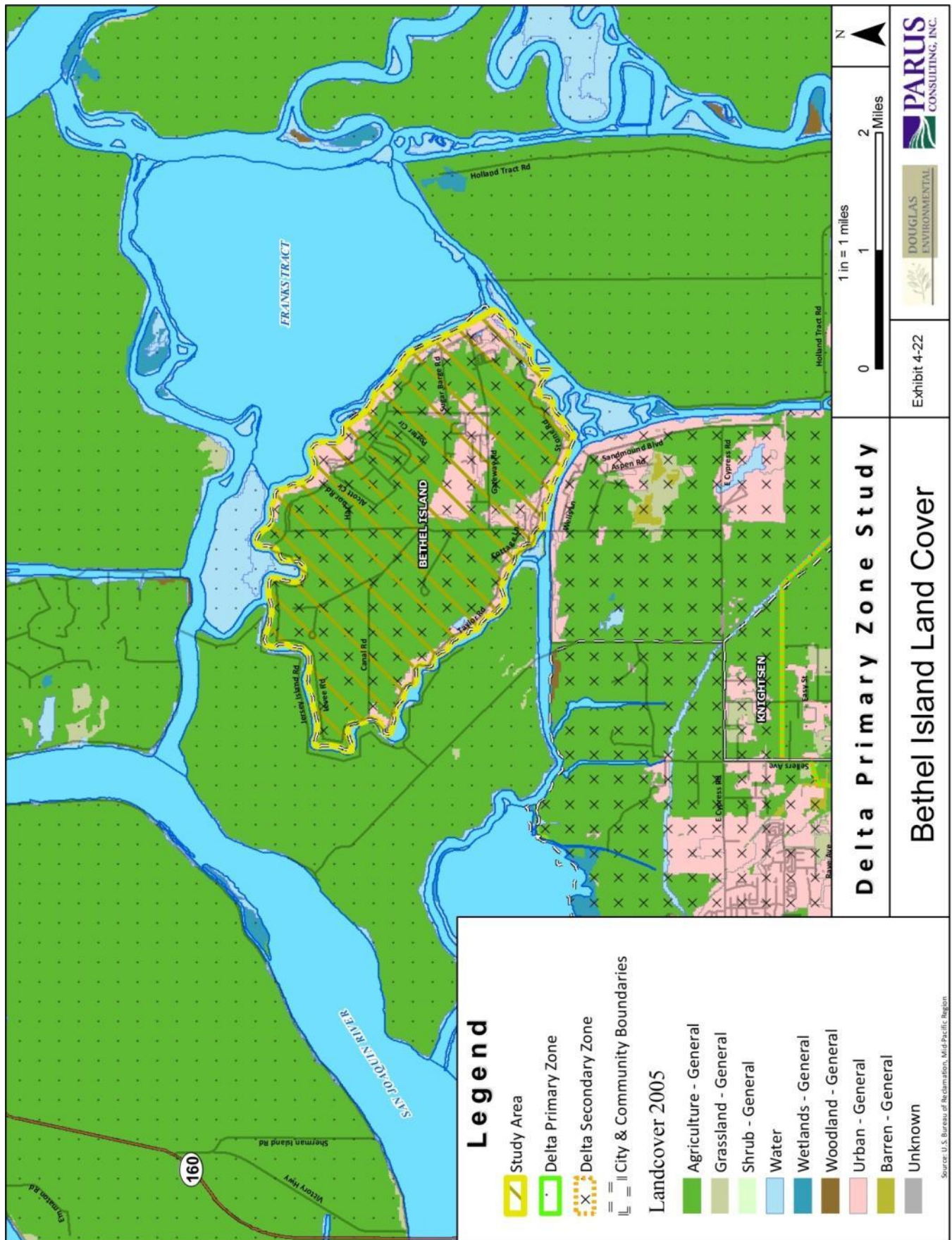
Recreation

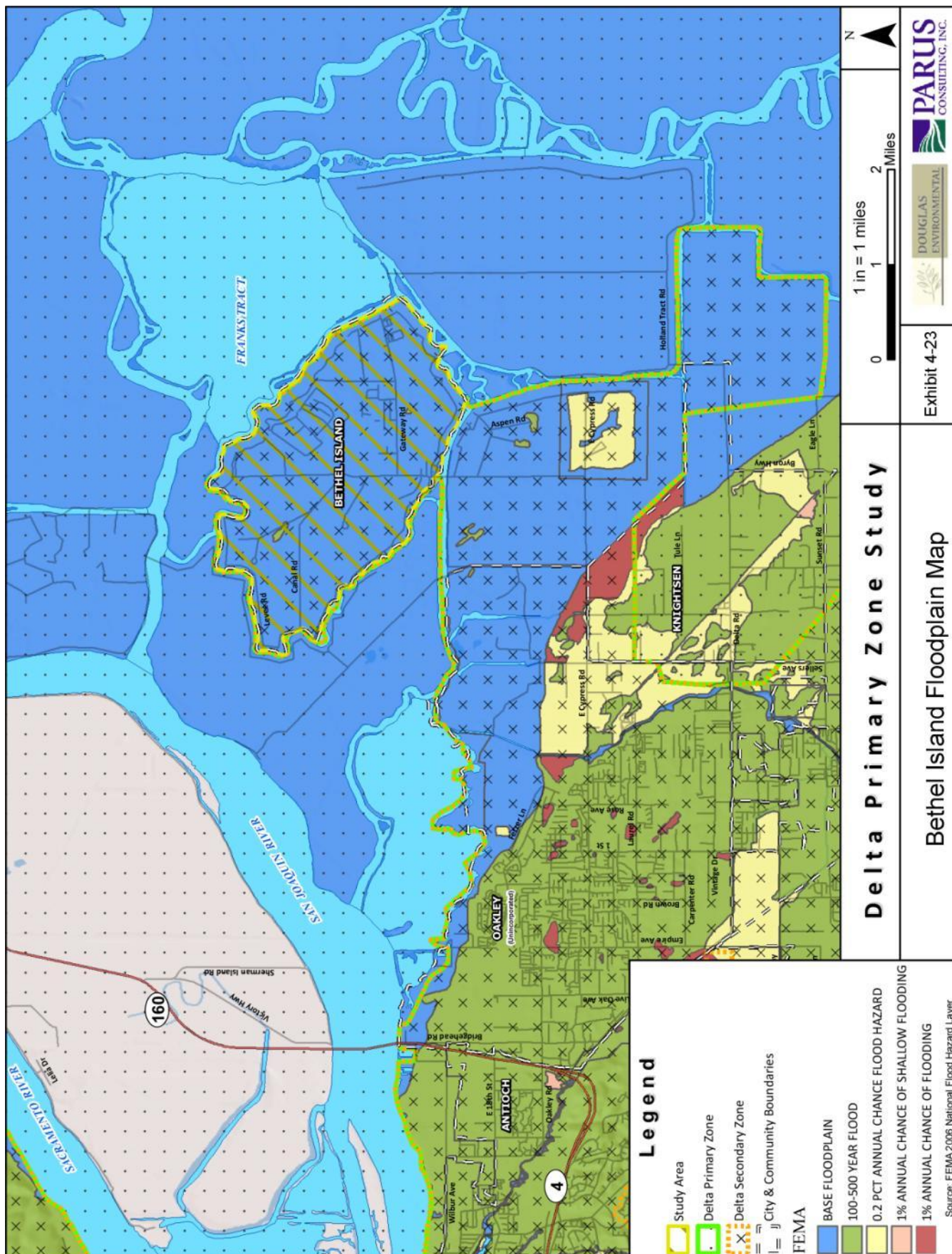
Bethel Island has the single highest concentration of boating-related facilities in the Delta. This is due in a large part to the density of boat docks on the island and the proximity of the recreational area established on the submerged Frank's Tract. Bethel Island is also one of the more developed islands in the delta, which makes it more accessible to Delta visitors.

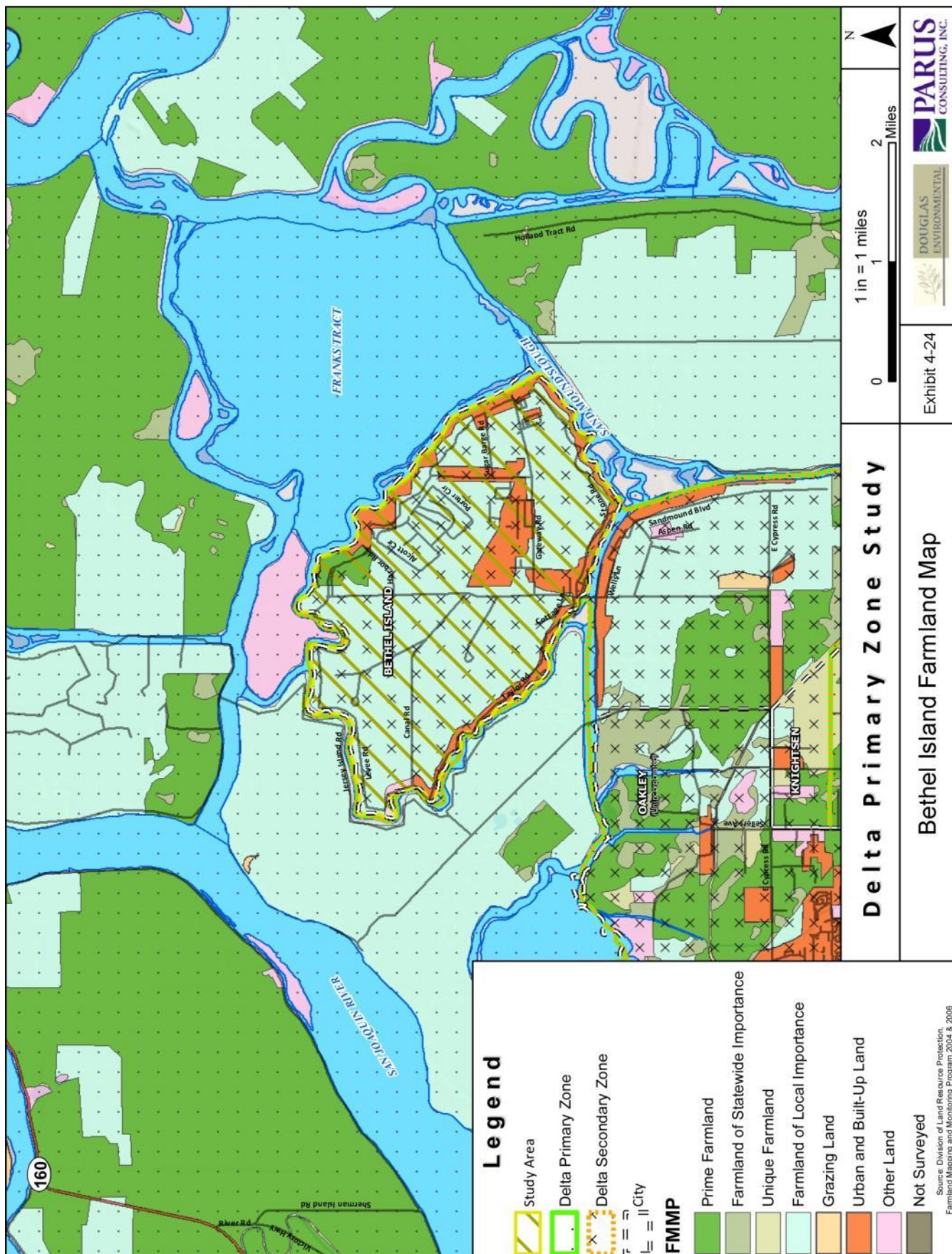
Flooding

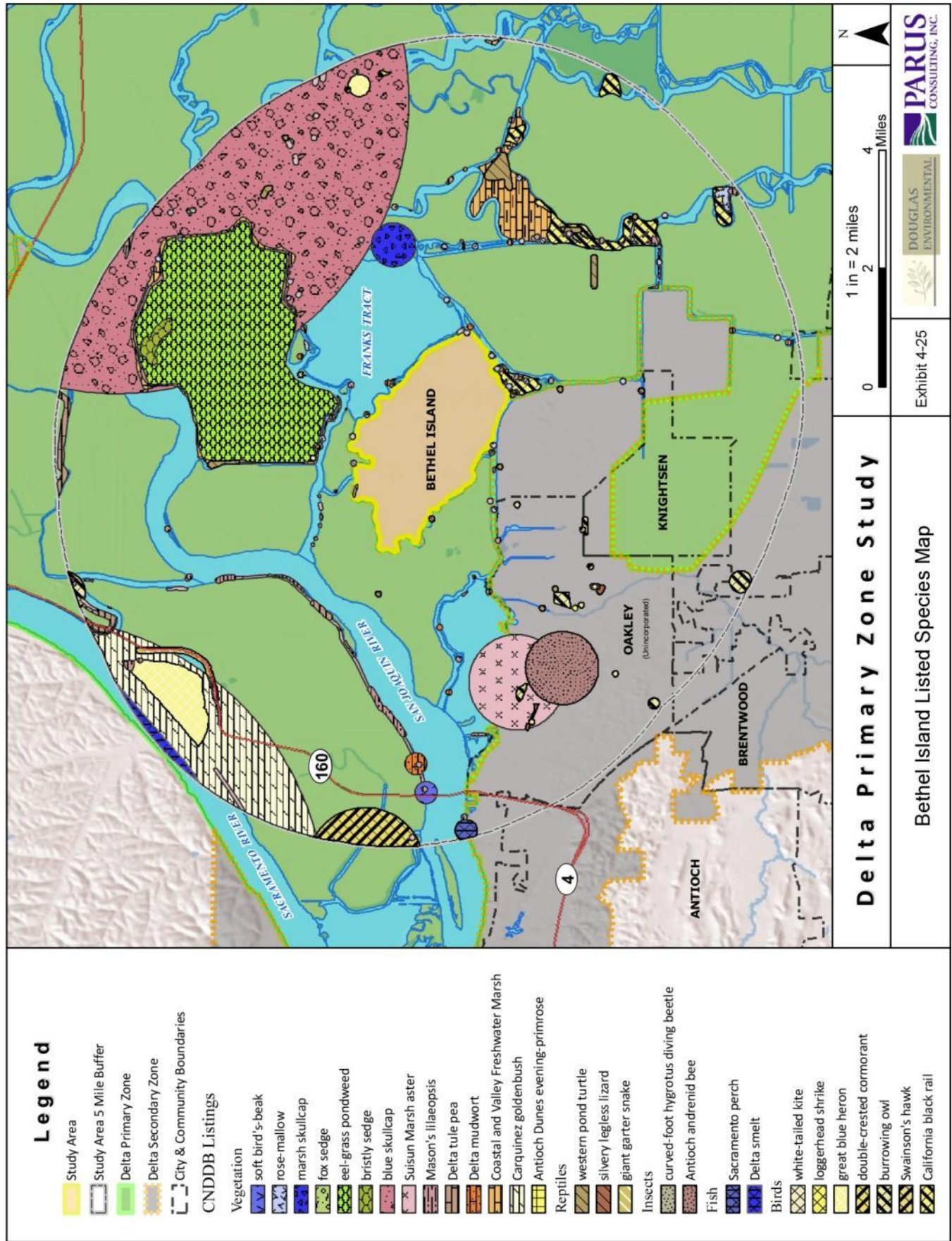
Bethel Island is located within a 100-year flood plain and the structural integrity of the levees that surround the island are inadequate to protect the island from flood events (Contra Costa County 2005).











San Joaquin River/South Delta

Over view

The San Joaquin River/South Delta Study Area is located along the southern margin of the Legal Delta in San Joaquin County. The 29,317-acre Study Area spans Interstate 5 and roughly follows the San Joaquin River as it flows from the southern boundary of the Legal Delta northwest toward the heart of the Delta. The Study Area abuts the Primary Zone to the north, but is currently located entirely within the Secondary Zone. The following areas are located in the Study Area: Pescadero District, Paradise Junction, Walthall, McMullin Ranch, Kasson District, and River Junction.

The Delta Vision described the San Joaquin River/South Delta Study Area as “the region extending north from the southern boundary of the legal Delta, including all of Pescadero Tract, Paradise Cut, and Stewart Tract and Reclamation Districts R-2075, R-2064, R-2085, R-2094, R-2095, the portion of R-1007 generally north of Bethany Road, and the portion of R-2058 north of Interstate 205.” For the purpose of this study, the areas located within incorporated cities were removed from the Study Area, consistent with the intent of the Delta Protection Act of 1992.

The Study Area supports valuable agricultural land, but there are concerns regarding development pressures from surrounding communities, especially the Tracy, Lathrop, and Mountain House areas. Extensive studies have been ongoing regarding the potential for habitat restoration and enhancements along the San Joaquin River and the implementation of regional flood control solutions.

Land Use

The Study Area is located within the Manteca and Tracy Planning Areas of the San Joaquin County General Plan. The predominant land use designation within the Study Area is Agriculture.

Agriculture

The majority of the Study Area includes Prime Farmland, Farmland of Statewide Importance or Unique Farmland, as defined by the California Department of Conservation’s Farmland Mapping and Monitoring Program. The agricultural uses are primarily located on upland areas that are consistent with and representative of the agricultural activities in the Central Valley, rather than those of the Delta. The agricultural uses within the Study Area are supported by a strong agricultural community that includes the support facilities in the surrounding communities necessary to maintain ongoing agricultural operations into the future.

Biological Resources

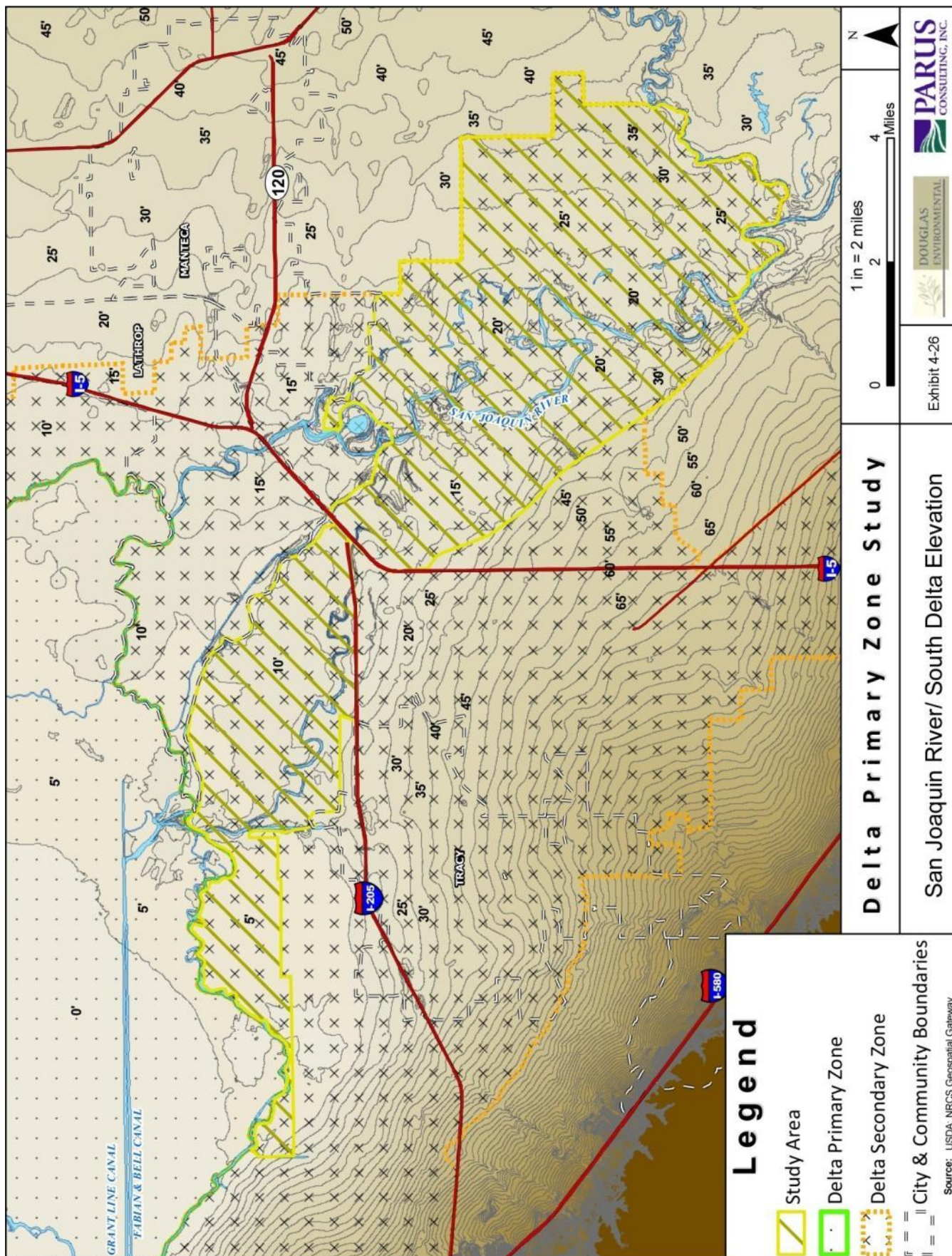
The Study Area is dominated by agricultural uses with biological resources concentrated in the southern portion of the Study Area and along the corridor of the San Joaquin River. The aquatic habitat types along the river include extended stretches of riparian vegetation that support sensitive wildlife communities. The agricultural lands provide foraging habitat for sensitive raptors and other wildlife species.

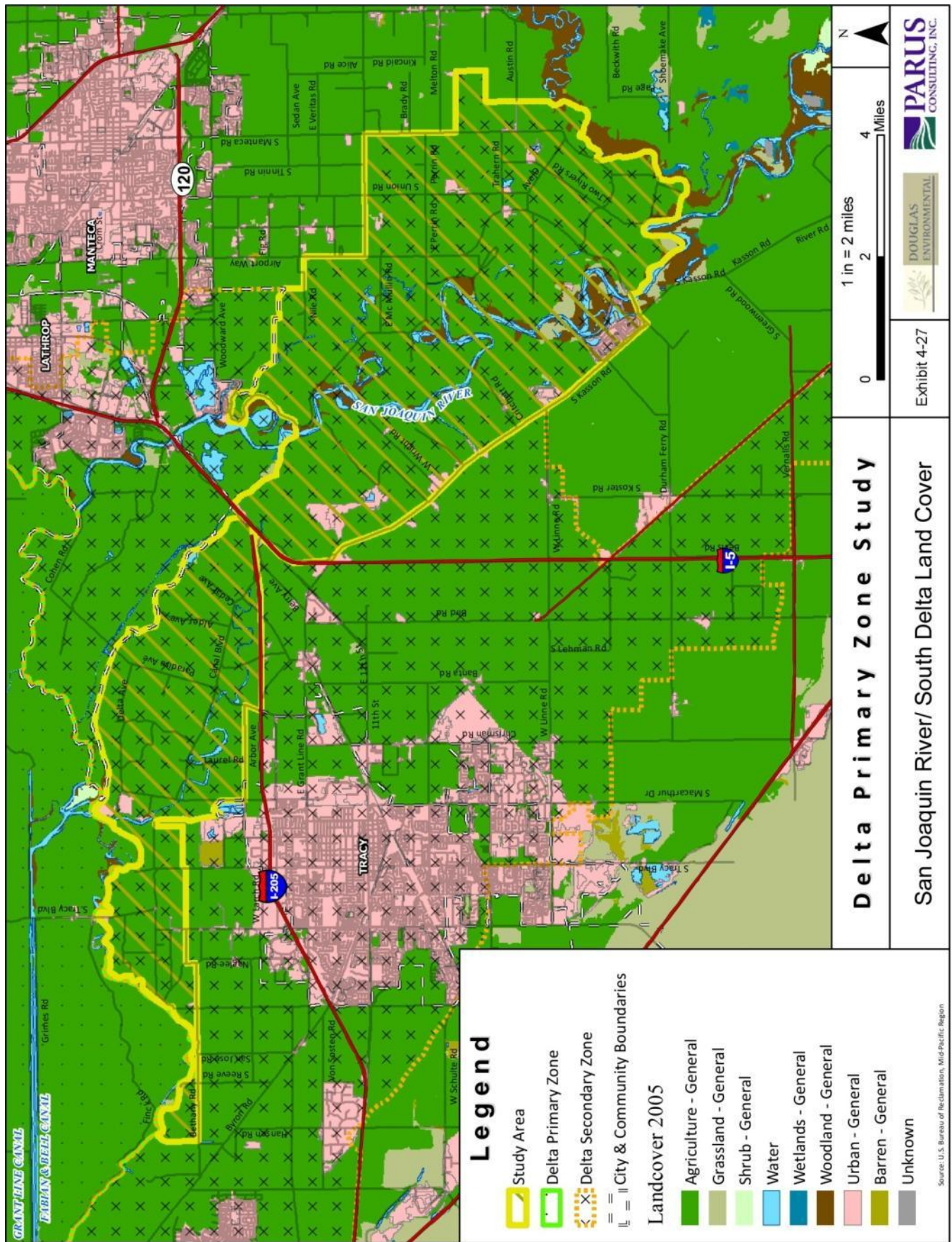
Recreation

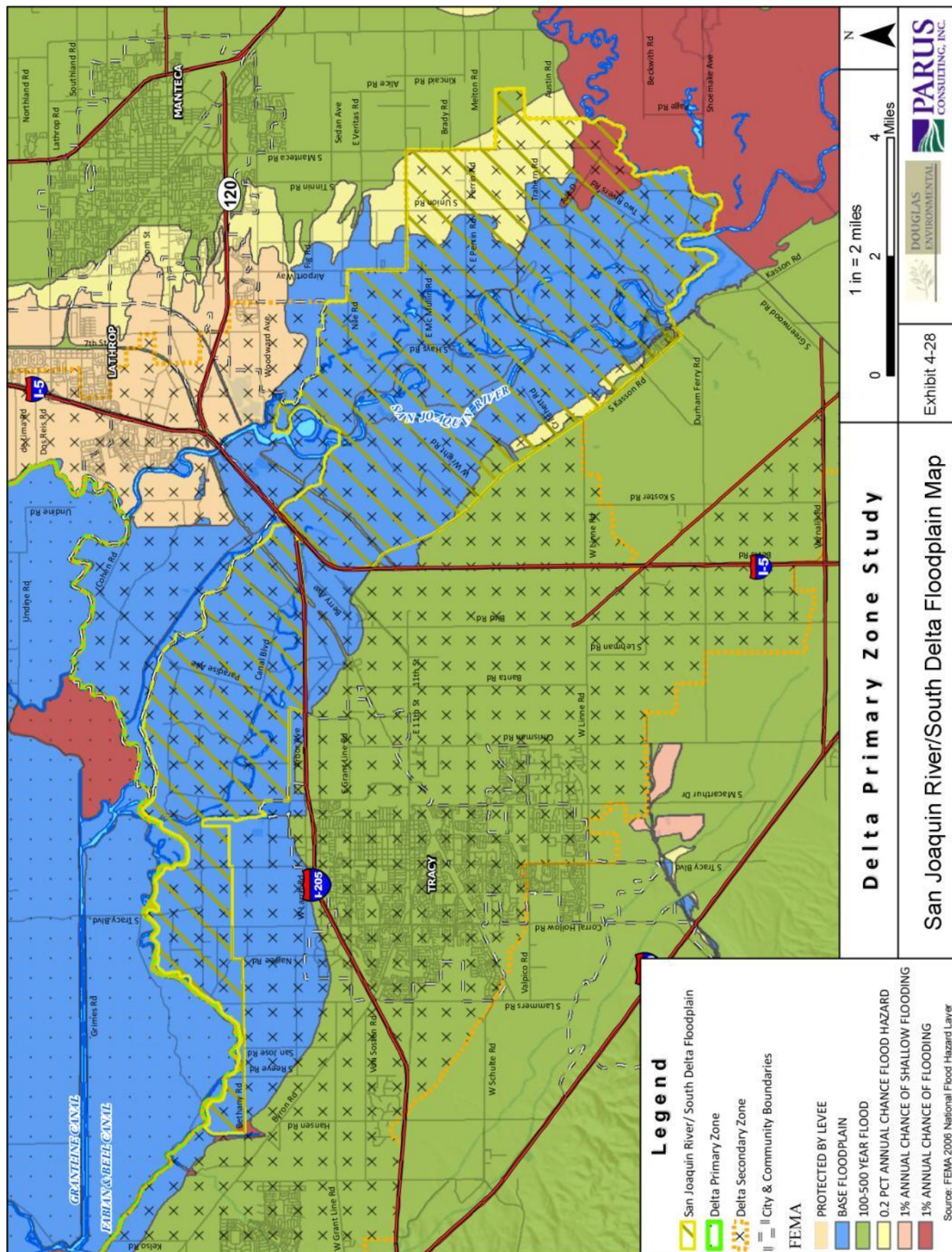
The Study Area is dominated by agricultural operations on private land holdings. Therefore, the Study Area provides only limited recreation opportunities. The Study Area includes the San Joaquin River, which is used for aquatic recreation, but few access points are provided for recreational uses. However, some recreational uses are present within the Study Area including the Durham Ferry State Recreation Area and the Manteca Sportsman's Clubhouse in the southern portion, the Eagal Lakes water ski park within the central portion, and the Old River Golf Course and Golden Anchor Boat Club in the western portion.

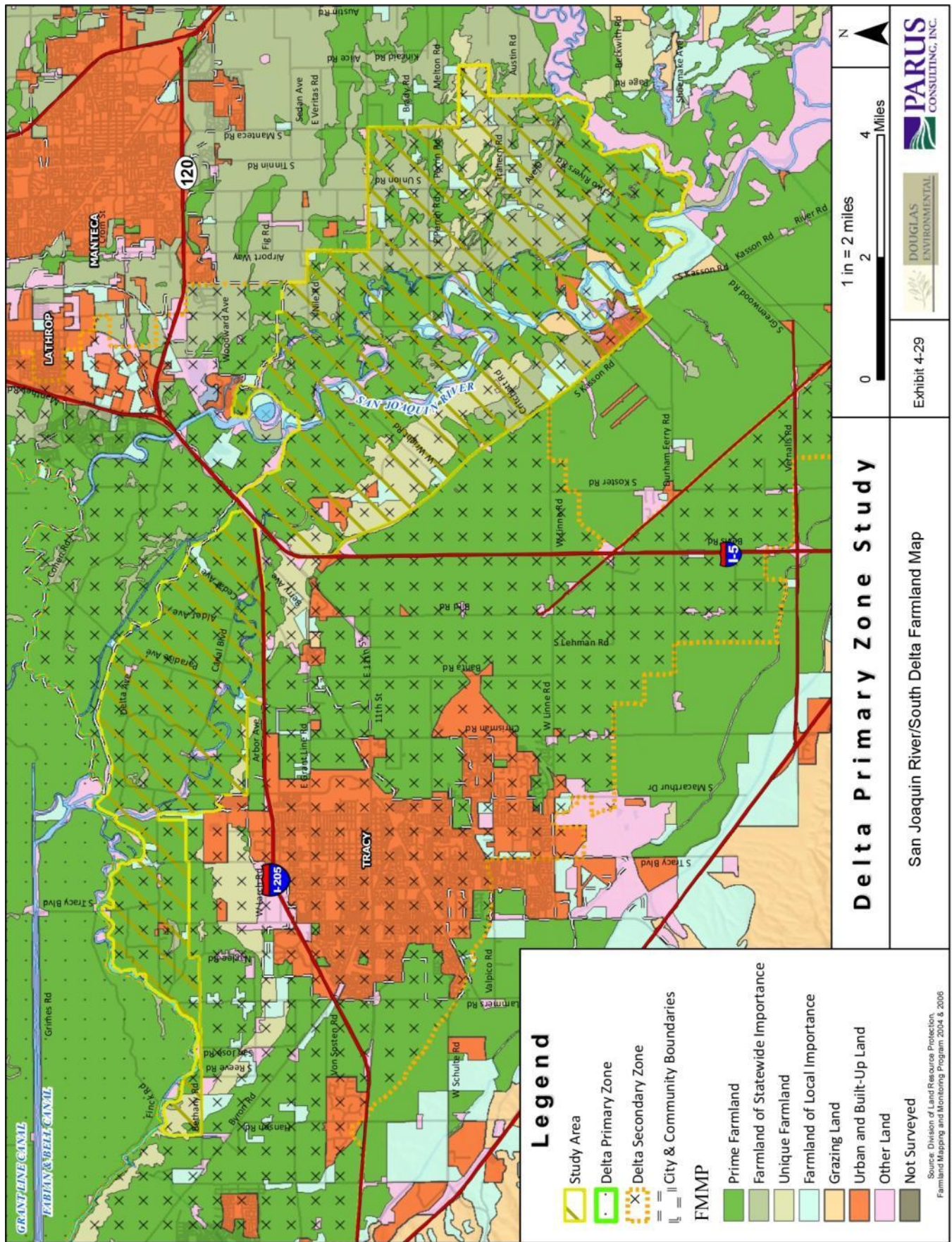
Flooding

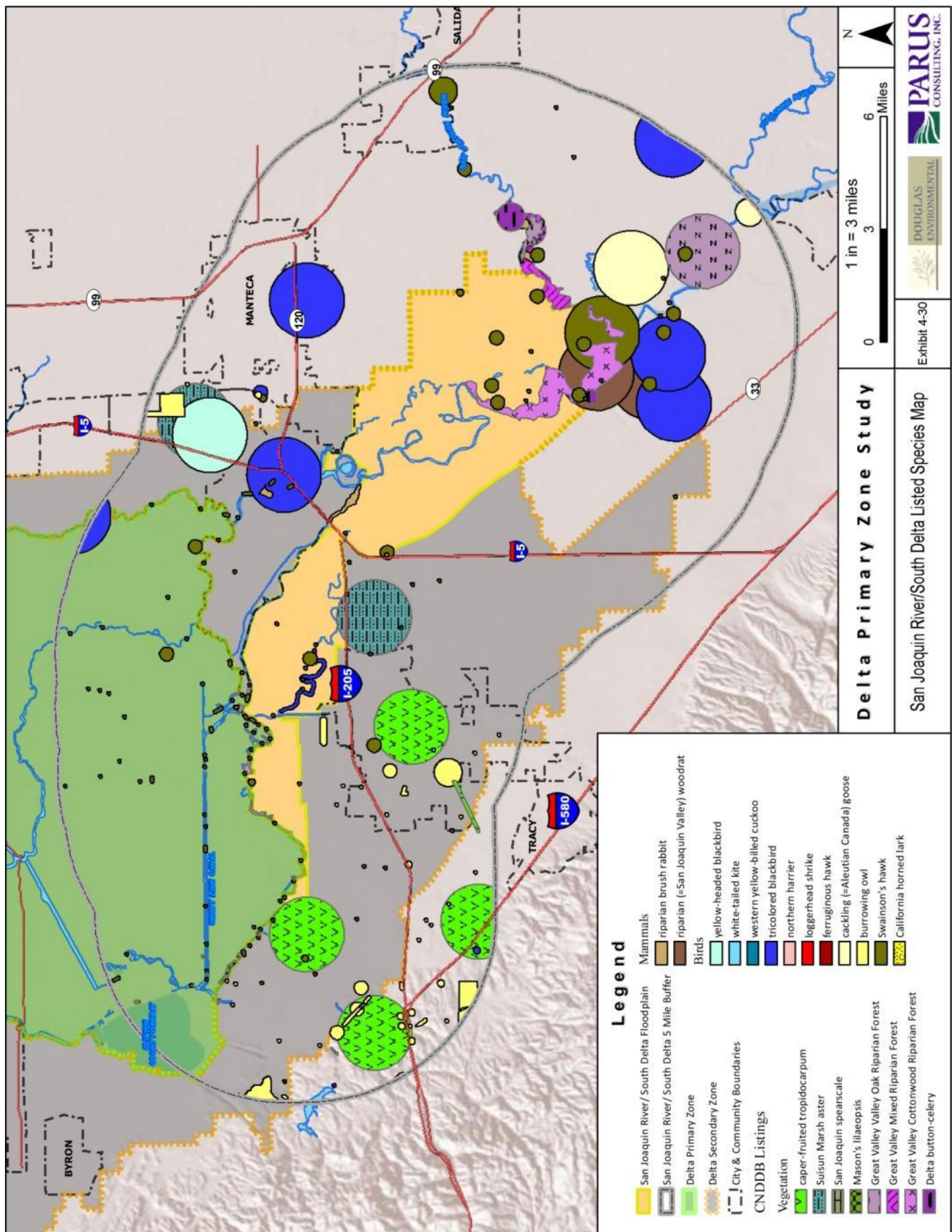
Flood risk is the most significant constraint on potential development in the Study Area. With an average elevation of approximately 15 feet above mean sea level, the Study Area is almost entirely located within the 100-year flood plain of the San Joaquin River.













5 ANALYSIS MATRICES

In order to define the unique areas of the Delta, Analysis Matrices have been developed for each of the six Study Areas included in the Primary Zone Study. An Analysis Matrix is a planning tool used to compile a large volume of data into a concise spreadsheet that allows a comparison of the data between individual study areas. The Analysis Matrix provides a visual representation of the resource characteristics of each individual Study Area.

The Analysis Matrices identify across the top row each individual Study Area with the evaluation criteria identified in the first column. For each evaluation criteria, the consultant team determined whether the individual Study Areas were generally consistent or inconsistent with the criteria. Due to the unique character and diversity of the Cosumnes/Mokelumne River Study Area, it was divided into three distinct areas for evaluation purposes. The evaluation criteria used in the Analysis Matrices are identified below.

Primary Zone Study Evaluation Criteria

Flood Zone Designations

Is the majority of the area located within a 100-year flood hazard area, as mapped on the federal Flood Hazard Boundary or Flood Insurance Rate Map? If an area is included within a 100-year flood hazard area, it was determined to be supportive of inclusion in the Primary Zone.

Agricultural Quality

Does the majority of the study area contain significant agricultural resources (i.e., agricultural land that is designated as prime farmland, unique farmland, farmland of statewide significance, or farmland of local importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency or the applicable City or County general plan)? If an area contains significant agricultural resources, it was determined to be supportive of inclusion in the Primary Zone.

Agricultural Vitality

Is the study area primarily agriculturally-oriented with agriculture being the primary focus of the local economy and the primary generator of local jobs? If an area is primarily agriculturally-oriented, it was determined to be supportive of inclusion in the Primary Zone.

Land Use Designations

Is the majority of the area designated for Agriculture, Open Space or Natural Resource uses in the applicable City or County General Plans? If an area is designated for Agriculture, Open Space or Natural Resource uses, it was determined to be supportive of inclusion in the Primary Zone.

Planned Growth

Has an application been submitted to the applicable local government for a substantial development project within the boundaries of the study area? If an application has not been submitted, then the study area was determined to be supportive of inclusion in the Primary Zone. A substantial development project is defined as a residential development of more than 500 dwelling units; a shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor area; a commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space; a hotel or motel having more than 500 rooms; an industrial, manufacturing or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area; a mixed-use project meeting the criteria identified above; or a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project, per the definitions included in Title 14, California Code of Regulations, Chapter 3, Section 15155(a).

Local and Regional Plans and Policies Supporting Delta Resources

Are local and/or regional plans and policies in place that would support the continued viability of agricultural, recreational and wildlife resources within the study area (i.e., do the policies discourage substantial development projects within the study area)? If supportive policies were in place within the study area, it was determined to be supportive of inclusion in the Primary Zone.

Recreational Resources

Does the study area contain a density of recreational resources that are able attract users from both within and outside of the study area and that contribute to the continued economic sustainability/viability of the study area (e.g., boat ramps, marinas, fishing and hunting opportunities, hiking, bird watching, boating, camping, picnicking, etc.)? If an area contained a density of recreational resources, it was determined to be supportive of inclusion in the Primary Zone.

Habitat and Wildlife Resources

Does the study area contain high value wildlife resources as determined by the presence of wetlands, riparian corridors, other sensitive habitats, and special-status species (as identified on the California Natural Diversity Database)? If an area contained high value wildlife resources, it was determined to be supportive of inclusion in the Primary Zone.

Parcel Size

Does the majority of the study area contain large lots designated for Agricultural or Open Space uses (i.e., 40 acres or larger)? If an area contained large lots designated for Agricultural or Open Space uses, it was determined to be supportive of inclusion in the Primary Zone.

Rural Versus Urban Uses

Is the study area primarily rural (i.e., it is not located within an incorporated City and does not include primarily urban development)? If an area was determined to be primarily rural, it was determined to be supportive of inclusion in the Primary Zone.

Resource Diversity

Does the study area contain a combination of high-value agriculture, abundant recreational opportunities, and diverse wildlife resources that are representative of the Delta's unique character and diversity? If an area contained a combination of high-value agriculture, abundant recreational opportunities, and diverse wildlife resources, it was determined to be supportive of inclusion in the Primary Zone.

Study Evaluation Process

For each criteria identified above, an assessment was conducted by the consultant team to determine if the individual Study Areas meet the specific criteria identified. If a Study Area met an individual criterion, it was designated as such in the Analysis Matrix. The dots in the columns of Tables 1 and 2 below indicated that the individual criterion has been met for the specific Study Area. Meeting a criterion indicates that that specific criterion is supportive of inclusion of that Study Area in the Primary Zone.

Table 1 – Study Area Analysis Matrix				
Evaluation Criteria	Study Areas			
	Cosumnes/ Mokelumne River North	Cosumnes/ Mokelumne River Central	Cosumnes/ Mokelumne River South	Bethel Island
Flood Zone Designations	•	•	•	•
Agricultural Quality	•	•	•	•
Agricultural Vitality	•	•	•	•
Land Use Designations	•	•	•	•
Planned Growth	•	•	•	•
Local and Regional Plans and Policies	•	•	•	•
Recreational Resources		•		•
Habitat and Wildlife Resources		•		•
Parcel Size	•	•		•
Rural versus Urban Uses	•	•	•	•
Resource Diversity		•		•
• Criteria is supportive of inclusion in the Primary Zone *See above for definitions of the Evaluation Criteria				

Table 2 – Study Area Analysis Matrix

Evaluation Criteria	Study Areas			
	Rio Vista	Isleton	Andrus/Brannan Island	San Joaquin River/South Delta
Flood Zone Designations		•	•	•
Agricultural Quality			•	•
Agricultural Vitality			•	•
Land Use Designations			•	•
Planned Growth	•	•	•	•
Local and Regional Plans and Policies			•	•
Recreational Resources	•	•	•	
Habitat and Wildlife Resources			•	
Parcel Size			•	•
Rural versus Urban Uses			•	•
Resource Diversity			•	
• Criteria is supportive of inclusion in the Primary Zone *See above for definitions of the Evaluation Criteria				

Once all of the criteria were evaluated for each Study Area and the Analysis Matrices were completed, the consultant team assessed the results. For each Study Area, the consultant team determined whether the majority of the resource criteria were supportive of the Delta resource protection objectives of preserving and enhancing agriculture, recreation, wildlife, and the Delta as a place. If the preponderance of the evidence suggested that the individual study areas were supportive of the identified Delta resource protection objectives as defined by the evaluation criteria, a recommendation was developed to include that Study Area within the Primary Zone. However, if the preponderance of the evidence did not suggest that the individual Study Areas were supportive of the identified Delta resource protection objectives, a recommendation was developed to keep the Study Area within the Secondary Zone.

Based on the results represented in Tables 1 and 2, the criteria for three of the Study Areas are supportive of their inclusion in the Primary Zone. These Study Areas include Cosumnes/Mokelumne River Central, Bethel Island, and Andrus/Brannan Island. In addition, the criteria are not supportive of maintaining Rio Vista within the Primary Zone. Based on these results, specific recommendations were submitted to the Delta Primary Zone Committee on November 22, 2010 for their consideration. These recommendations are identified below.



6 RECOMMENDATIONS

Primary Zone Study Recommendations

The analysis conducted in preparing the Primary Zone Study resulted in specific recommendations regarding boundary line adjustments within the Delta. These recommendations are based on the geographic and planning criteria that were integrated into the Analysis Matrices and objective interpretations of these criteria by the consultant team. Therefore, these recommendations are presented from a planning perspective and are not intended to incorporate the broad range of issues and considerations that need to be considered by the Delta Protection Commission in submitting recommendations to the Legislature. The consultant team's recommendations are as follows:

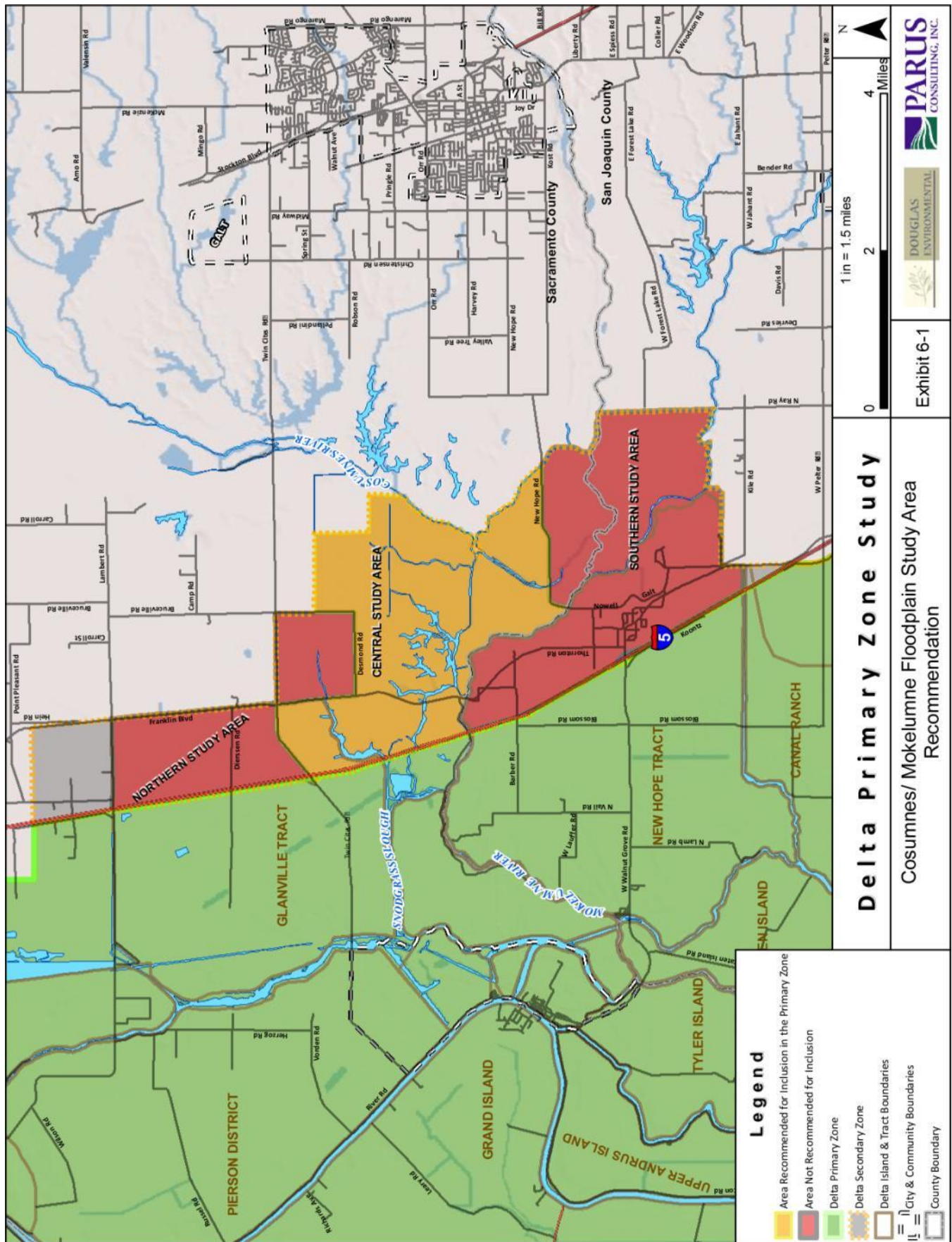
Recommendation #1 – Redesignate the following study areas within the Secondary Zone as Primary Zone: Cosumnes/Mokelumne River Central, Bethel Island and Andrus/Brannan Island.

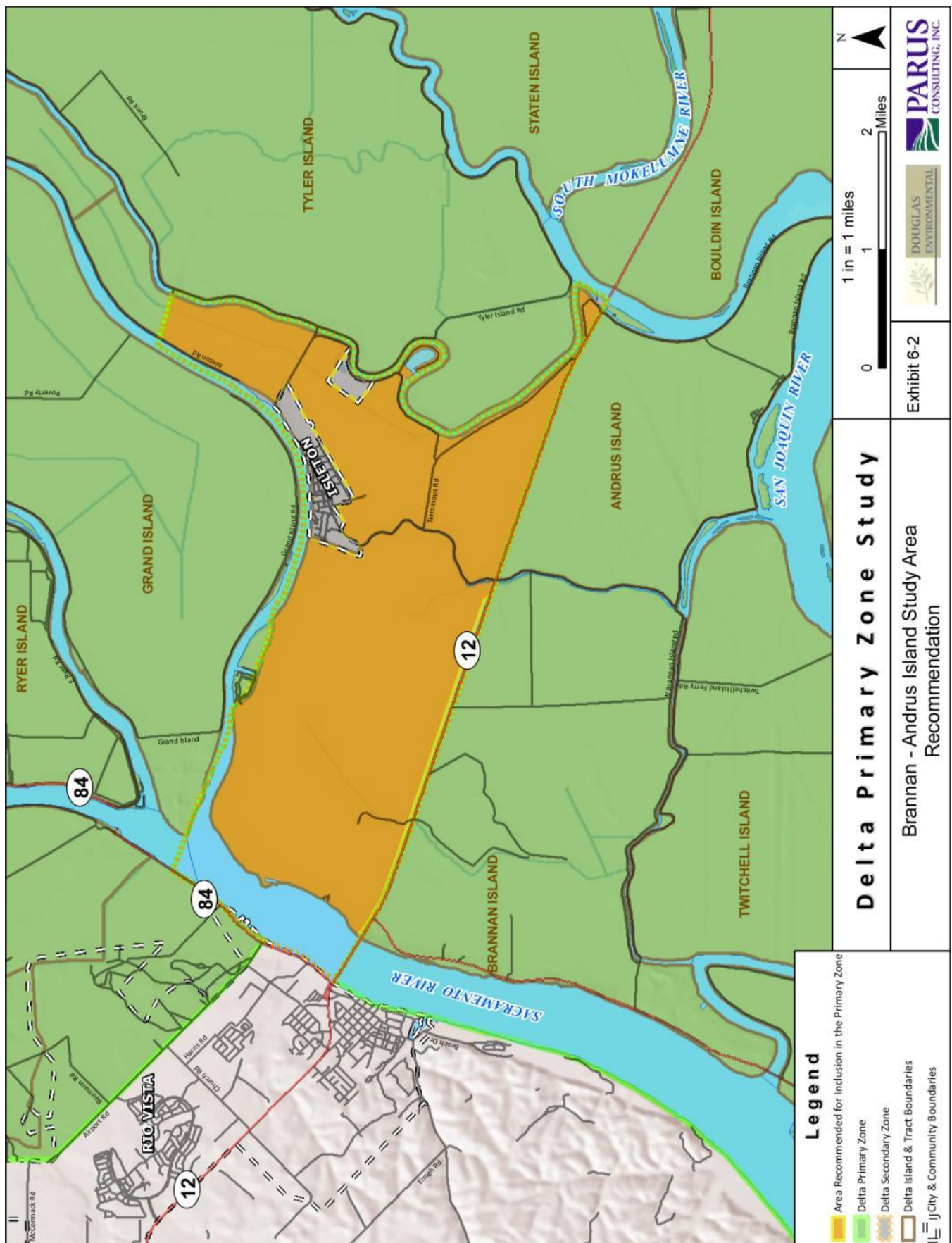
Recommendation #2 - Maintain the Secondary Zone designation for the following study areas: Cosumnes/Mokelumne River North, Cosumnes/Mokelumne River South, Isleton, and San Joaquin River/South Delta.

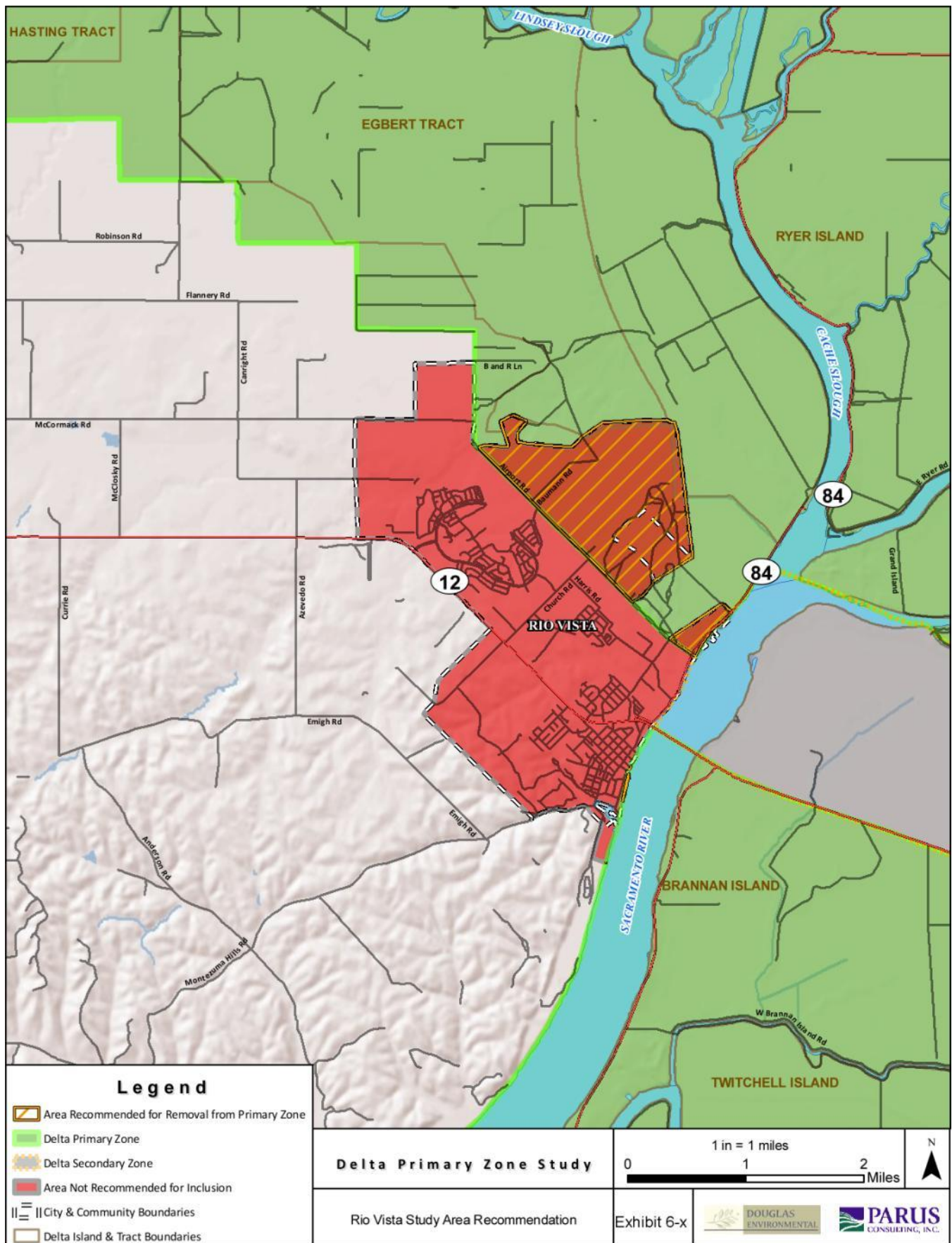
Recommendation #3 – Redesignate the Primary Zone area within the City of Rio Vista as Secondary Zone.

As described above, these recommendations were submitted to the Delta Primary Zone Committee on November 22, 2010 for their consideration. At this meeting, the Committee agreed to forward these recommendations to the Delta Protection Commission for their consideration on December 16, 2010. The Committee also requested that information regarding the Rio Vista Study Area be forwarded to the Delta Protection Commission for consideration. This information is described below.

In a letter submitted to the Delta Protection Commission on July 21, 2010 (included as Appendix C), the City of Rio Vista requested that the Primary Zone Study Committee consider expanding the boundary of the legal Delta to include the boundaries of the entire City and that the entire City be included within the Secondary Zone. Although the proposed expansion of the legal Delta to accommodate the City's request is not included as one of the consultant team's recommendations, this request is within the scope of Senate Bill X7 1 and is appropriate for the Delta Protection Commission to consider in their development of recommendations for the Legislature.









7 REFERENCES

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